



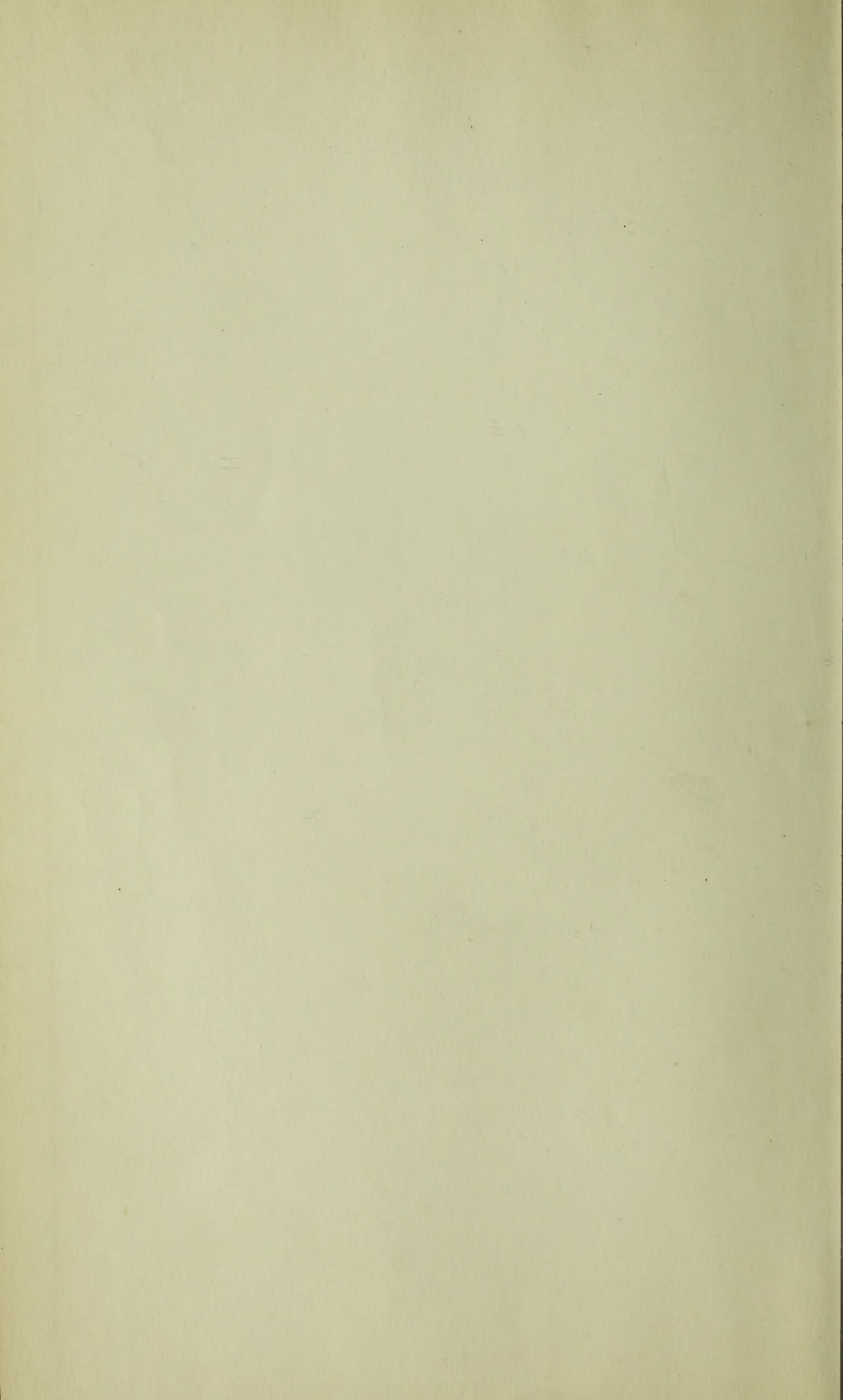
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The Commonwealth of Massachusetts

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ANNUAL REPORT

OF THE

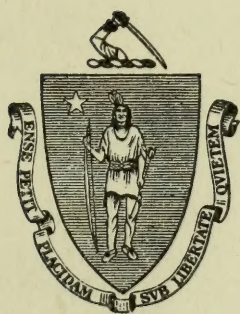
DEPARTMENT OF PUBLIC WORKS

FOR THE

YEAR ENDING NOVEMBER 30, 1920

RELATING TO THE

DIVISION OF HIGHWAYS AND THE REGISTRY OF  
MOTOR VEHICLES



BOSTON

WRIGHT & POTTER PRINTING CO., STATE PRINTERS

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1922

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APPROVED BY THE  
SUPERVISOR OF ADMINISTRATION.



# The Commonwealth of Massachusetts

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## DEPARTMENT OF PUBLIC WORKS.

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*To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts.*

Pursuant to the provisions of law, I have the honor as Commissioner of Public Works to submit the first annual report of the Department of Public Works for the fiscal year ending Nov. 30, 1920.

The divisions created by law to cover the activities of the Department have been organized in accordance with chapter 350 of the General Acts of 1919, which provided as follows:—

SECTION 111. The Massachusetts highway commission, existing under authority of chapter three hundred and forty-four of the General Acts of nineteen hundred and seventeen and acts in amendment thereof and in addition thereto, and the commission on waterways and public lands existing under authority of chapter two hundred and eighty-eight of the General Acts of nineteen hundred and sixteen, are hereby abolished. All the rights, powers, duties and obligations of said commissions are hereby transferred to and shall hereafter be exercised and performed by the department of public works established by this act, which shall be the lawful successor of said commissions.

SECTION 112. The department of public works shall be under the supervision and control of a commissioner, to be known as commissioner of public works, and four associate commissioners, all of whom shall be appointed by the governor, with the advice and consent of the council. The commissioner shall be appointed for the term of three years. Of the associate commissioners first appointed, two shall be appointed for the term of one year and two for the term of two years. Thereafter as the terms expire the governor shall appoint the commissioner and the associate commissioners for the term of three years, shall fill any vacancy for the unexpired term, and may, with the consent of the council, remove the commissioner or any of the associate commissioners. The commissioner shall receive such annual salary, not exceeding seven thousand five hundred dollars, and the associate commissioners such annual salaries not exceeding six thousand dollars, as the governor and council may determine.

SECTION 113. The department shall be organized in two divisions, namely, a division of highways and a division of waterways and public



lands. The said divisions shall have, exercise and perform, the rights, powers, duties and obligations, respectively, of the Massachusetts highway commission and the commission on waterways and public lands, except as is otherwise provided herein. The governor shall, at the time of making the first appointments under the preceding section, designate two of the associate commissioners to have charge of the division of highways and two to have charge of the division of waterways and public lands. Thereafter, whenever a change in the associate commissioners occurs, the governor may make a new designation. The commissioner shall be entitled to act as a member of both divisions, and when present shall act as chairman of the division. The concurrence of two members shall be necessary in any official act of either division.

SECTION 114. The commissioner shall be the executive and administrative head of the department. He shall approve all contracts made by either division, and may require any of the expenditures of either division to be submitted to him for approval. He may, subject to the civil service law and rules, where they apply, appoint, assign to divisions, transfer and remove such officials and employees as the work of the department may require, and, subject to the provisions of chapter two hundred and twenty-eight of the General Acts of nineteen hundred and eighteen, and the rules and regulations made thereunder, and to the approval of the governor and council where that is required by law, fix the compensation of the said persons.

SECTION 115. The commissioner shall appoint, and may remove, subject to the approval of the governor and council, an official to be known as registrar of motor vehicles, and may, with like approval, fix his compensation. The registrar of motor vehicles shall have, exercise and perform all the rights, powers, duties and obligations of the Massachusetts highway commission relative to motor vehicles and to the operation thereof, as defined by chapter five hundred and thirty-four of the acts of nineteen hundred and nine, and acts in amendment thereof and in addition thereto. Any person aggrieved by a regulation, ruling or decision of said registrar may, within ten days thereafter, appeal from such regulation, ruling or decision to the commissioners of the division of highways who may, after a hearing, order such regulation, ruling or decision to be affirmed, modified or annulled.

SECTION 116. All rules and regulations under provisions of existing law within the jurisdiction of the division of highways, the division of waterways and public lands or the registrar of motor vehicles shall be drafted by the commissioners having charge of said divisions or by said registrar, shall be submitted to the commissioner and associate commissioners sitting as a board, and shall take effect, subject to the provisions of chapter three hundred and seven of the General Acts of nineteen hundred and seventeen, when approved by them, and at such time as they shall designate. Said board shall also have power to make all needful rules and regulations for carrying out the provisions of this act relating to the said department.



Under the terms of the act the following original appointments were made:—

Commissioner of Public Works, for three years, JOHN N. COLE.

*Division of Highways.*

Associate Commissioner, for one year, FRANK D. KEMP.

Associate Commissioner, for two years, JAMES W. SYNAN.

*Division of Waterways and Public Lands.*

Associate Commissioner, for one year, JESSE B. BAXTER.

Associate Commissioner, for two years, RICHARD K. HALE.

In the reorganization, changes in personnel and changes in the work assigned to different employees have resulted in a co-ordination of work that is believed to promise greatly increased efficiency in handling the duties and responsibilities of the Department. In carrying out the work of reorganization the following assignments have been made:—

Executive Secretary for the Department, FREDERICK N. WALES.

*Division of Highways.*

Chief Engineer, ARTHUR W. DEAN.

Construction Engineer, FRANKLIN C. PILLSBURY.

District Engineers:—

District No. 1, Berkshire County, GEORGE A. CURTIS.

District No. 2, Franklin and Hampshire counties, H. D. PHILLIPS.

District No. 3, Hampden and Worcester counties, JOHN A. JOHNSTON.

District No. 4, Middlesex County, F. D. SABIN.

District No. 5, Essex and Suffolk counties, D. H. DICKINSON.

District No. 6, Norfolk and Bristol counties, R. W. COBURN.

District No. 7, Plymouth, Barnstable, Dukes and Nantucket counties,  
GEORGE H. DELANO.

Recording Secretary for the Division, MARY A. RILEY.

Financial Secretary for the Division, FRED FAIR.

*Division of Waterways and Public Lands.*

Chief Engineer, FRANK W. HODGDON.

Assistant to the Chief Engineer, for Boston Harbor, JOHN N. FERGUSON.

Assistant to the Chief Engineer, for harbors and waterways outside  
Boston Harbor, FRANCIS L. SELLEW.

Recording Secretary for the Division, EDNA F. TOWNSEND.

Financial Secretary for the Division, CORA I. ALLEN.

Bridge Engineer for the Department, WILLIAM F. WILLIAMS.

*Registry of Motor Vehicles.*

Registrar, FRANK A. GOODWIN.

Chief Clerk, CHARLES R. GILLEY.

Chief of Inspection Force, ALBERT S. OLSSON.

A detailed report is presented herewith, covering the activities for the year of the Division of Highways and the Registry of Motor Vehicles.

JOHN N. COLE,

*Commissioner.*



## DIVISION OF HIGHWAYS.

## APPROPRIATIONS.

The appropriations for the construction and repair of State highways during the period 1903 to 1919, inclusive, were —

1903 . . . . .	\$2,250,000 00 <sup>1</sup>
1907 . . . . .	2,500,000 00 <sup>1</sup>
1912 . . . . .	5,000,000 00 <sup>1</sup>
1919 . . . . .	4,000,000 00 <sup>2</sup>
<hr/>	
Total . . . . .	\$13,750,000 00

The total of such appropriations during the period 1894 to Nov. 30, 1919, inclusive, was \$18,250,000.

The appropriations for maintenance during the period 1914 to 1919, inclusive, paid from the treasury of the Commonwealth, were —

1914 . . . . .	\$350,000 00 <sup>3</sup>
1915 . . . . .	350,000 00 <sup>3</sup>
1916 . . . . .	415,000 00 <sup>3</sup>
1917 . . . . .	404,547 86 <sup>3</sup>
1918 . . . . .	258,462 80
1919 . . . . .	312,524 64
<hr/>	
Total . . . . .	\$2,090,535 30

The total of such appropriations during the period 1903 to Nov. 30, 1919, inclusive, was \$3,604,701.96.

The appropriations made in 1920 and relating to the Department of Public Works, Division of Highways, are included in various items in chapters 225 and 629, Acts of 1920, and also set forth in chapter 572, Acts of 1920, as follows: —

<sup>1</sup> To cover expense of construction for a period of five years.

<sup>2</sup> To cover expense of construction for a period of four years, 1920-23, inclusive.

<sup>3</sup> Includes appropriations for widening.

*Chapter 225, Acts of 1920, making Appropriations for the Maintenance of Departments, Boards, Commissions, Institutions and Certain Activities of the Commonwealth, for Interest, Sinking Fund, and Serial Bond Requirements, and for Certain Permanent Improvements.*

SERVICE OF THE DEPARTMENT OF PUBLIC WORKS.

Item

587	For the salaries of the commissioner and the four associate commissioners, a sum not exceeding . . . . .	\$30,500 00
587½	For personal services of clerks and assistants to the commissioner, a sum not exceeding . . . . .	9,000 00
	Division of Highways (the following appropriations for the operation and maintenance of this division are made from the receipts of the Motor Vehicle Fees Fund):	
588	For the personal services of the chief engineer, engineers and office assistants, including certain clerks and stenographers, a sum not exceeding . . . . .	40,000 00
589	For travelling expenses of the commissioners, when travelling in the discharge of their official duties, a sum not exceeding . . . . .	3,500 00
590	For services other than personal, including printing the annual report and necessary office supplies and equipment, a sum not exceeding . . . . .	12,000 00
591	For the care, repair and storage, replacement and purchase of road-building machinery and tools, a sum not exceeding . . . . .	375,000 00
592	For the suppression of gypsy and brown tail moths on state highways, a sum not exceeding . . . . .	13,000 00
593	For the maintenance of state highways and the improvement and construction of town ways and certain through routes, in accordance with the provisions of existing laws, and for the payment of any claims for damages occurring on state highways, with the approval of the attorney-general, a sum not exceeding two million five hundred fifty-seven thousand seven hundred sixty dollars and fifty-six cents from receipts in the Motor Vehicle Fees Fund, and in addition thereto the sum of three hundred fifty-eight thousand eight hundred eighty-nine dollars and forty-four cents, representing the amount received in the treasury from assessments on cities and towns for the maintenance of state highways . . . . .	2,916,650 00
594	For the maintenance and operation of the Newburyport bridge and the Brightman street bridge in Fall River, in accordance with the provisions of existing laws, a sum not exceeding . . . . .	18,000 00
597	For the purpose of enabling the department of public works to secure federal aid for the construction of highways, a sum not exceeding one million dollars in addition to any other funds which the department has available for the purpose; of the said sum two hundred thousand dollars shall be payable from receipts from counties for assessments on highways previously constructed, and the balance from the general fund . . . . .	1,000,000 00



*Chapter 629, Acts of 1920, in Addition to the General Appropriation Act making Appropriations to supplement Certain Items therein, and for Certain New Activities and Projects.*

SERVICE OF THE DEPARTMENT OF PUBLIC WORKS.

Item

587	For the salaries of the commissioner and the four associate commissioners, a sum not exceeding five hundred dollars, the same to be in addition to the appropriation heretofore made for the purpose . . . . .	\$500 00
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*Division of Highways.*

588	For the personal services of the chief engineer, engineers and office assistants, a sum not exceeding . . . . .	900 00
594	For the maintenance and operation of the Newburyport bridge and the Brightman street bridge in Fall River, a sum not exceeding . . . . .	680 00
	Severally to be in addition to any appropriations heretofore made for the purpose, and to be paid from the receipts from motor vehicle fees.	
594½	For the care of snow on highways as provided by chapter four hundred and eighty-eight of the acts of the present year, a sum not exceeding fifty thousand dollars, the same to be paid from the receipts from motor vehicle fees . . . . .	50,000 00
594½	For the state's proportion' of the expenses authorized for special highway improvement under the provisions of certain special acts of the present year, a sum not exceeding eighty-five thousand dollars, to be paid from the receipts from motor vehicle fees, provided that any contributions from counties, cities, towns and individuals required by the said special acts, shall be credited to the account, with the appropriation for the state's proportion when the said contributions are paid into the state treasury, and shall be used in accordance with the provisions of the said acts; and the highway division is hereby authorized to expend, without further appropriation, any money contributed by the counties, cities and towns of the commonwealth and to make expenditures in anticipation of assessments to be levied upon any counties, cities and towns, for the improvement of highways under chapters five hundred and nineteen, five hundred and twenty, five hundred and twenty-one, five hundred and twenty-two, five hundred and thirty-six, five hundred and sixty-six and five hundred and seventy-one of the acts of the present year. Any unexpended balance of these special funds may be used in the succeeding year for the same purpose . . . . .	85,000 00

DEFICIENCIES.

For deficiencies in certain appropriations of previous years in certain items as follows:

*Division of Public Works.*

For maintenance and operation of the Somerset and Newburyport bridges, the sum of . . . . .	182 24
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Chapter 572, Acts of 1920, section 1, authorizes the Division to expend an additional sum of \$1,000,000 before Nov. 30, 1924, for the purpose of completing the construction of certain highways in the five western counties of the State under the provisions of chapter 221, General Acts of 1915.

#### EXPENDITURES.

Summary of expenditures by the Division during the fiscal year ending Nov. 30, 1920: —

For construction of State highways, under chapter 344, General Acts of 1917, Part 1 . . . . .	\$1,410,478 33
For maintenance of State highways, from Motor Vehicle Fees Fund, under chapter 344, General Acts of 1917, Part 1, and chapter 225, Acts of 1920, item 593 . . . . .	1,621,332 10
For maintenance of State highways from revenue appropriations, under chapter 344, General Acts of 1917, Part 1, and chapter 225, Acts of 1920, item 593 . . . . .	358,889 44
For maintenance and improvement of town and county ways, under chapter 525, Acts of 1910 . . . . .	518,396 47
For construction and repair of ways in certain towns, under chapter 344, General Acts of 1917, Part 1, section 23 . . . . .	65,475 47
For highways in the five western counties, under chapter 221, General Acts of 1915, chapter 225, Acts of 1920, and chapter 572, Acts of 1920 . . . . .	212,443 77
For repair and improvement of public ways, exclusive of State highways, in certain towns, under chapter 155, General Acts of 1918 . . . . .	229,950 57
For the construction of a State highway in Hingham, under chapter 213, General Acts of 1916 . . . . .	4,919 86
For the improvement of Prospect Street in Leominster, under chapter 236, General Acts of 1918 . . . . .	4,695 16
For the improvement of Prospect Street in Leominster, under chapter 231, Special Acts of 1919 . . . . .	5,778 55
For the construction and improvement of a highway in Holland and Brimfield, under chapter 232, Special Acts of 1919 . . . . .	5,392 35
For the improvement of a highway between Holden and the Wachusett Mountain State Reservation, under chapter 233, Special Acts of 1919 . . . . .	25,852 57
For the improvement of a highway in Middlefield, leading from Chester to Worthington, under chapter 240, Special Acts of 1919 . . . . .	7,113 73
For the improvement of a highway between Westborough and Grafton, under chapter 335, General Acts of 1919 . . . . .	4,000 00



For the construction of a highway in North Brookfield, leading to New Braintree, under chapter 336, General Acts of 1919 . . . . .	\$16,531 10
For the further improvement of a highway in Hubbardston and Rutland, under chapter 337, General Acts of 1919 . . . . .	27,954 64
For the construction of a State highway in Holyoke, under chapter 338, General Acts of 1919 . . . . .	1,488 28
For the improvement of a highway leading from Milford to Southborough through Hopkinton, under chapter 339, General Acts of 1919 . . . . .	7,354 25
For investigation relative to the construction of a State highway in Williamstown, under chapter 62, Resolves of 1919 . . . . .	82 70
For the improvement of a highway in Clinton, under chapter 520, Acts of 1920, and chapter 629, Acts of 1920, section 2, item 594½ . . . . .	127 75
For the improvement of a highway in Holden, under chapter 521, Acts of 1920, and chapter 629, Acts of 1920, item 594½ . . . . .	385 66
For the improvement of a highway in Templeton, under chapter 522, Acts of 1920, and chapter 629, Acts of 1920, item 594½ . . . . .	5,905 48
For the construction of a highway in Chester, Middlefield, Peru and Hinsdale, under chapter 566, Acts of 1920, and chapter 629, Acts of 1920, item 594½ . . . . .	318 94
For the care of snow on highways, under chapter 488, Acts of 1920, and chapter 629, Acts of 1920, item 594½ . . . . .	18,923 00
For the maintenance and operation of the bridge over Merrimack River between Newburyport and Salisbury, under chapter 716, Acts of 1912, and chapter 225, Acts of 1920, item 594 . . . . .	7,957 60
For the maintenance and operation of the bridge over Taunton Great River at Brightman Street in Fall River, under chapter 717, Acts of 1912, and chapter 225, Acts of 1920, item 594, . . . . .	8,068 19
For the care, repair and storage, replacement and purchase of road-building machinery and tools, under chapter 225, Acts of 1920, item 591 . . . . .	333,441 58
For the suppression of gypsy and brown-tail moths on State highways, under chapter 225, Acts of 1920, item 592 . . . . .	13,000 00
General expenses, under chapter 225, Acts of 1920, items 588, 589, 590 . . . . .	55,739 33
Under highway trust fund, in town of Sandwich . . . . .	7,450 47
Total, . . . . .	\$4,979,447 34

CO-OPERATIVE WORK — SUPERVISION OF EXPENDITURES.

The Division has supervised the expenditure, during the year, by cities, towns and counties, under chapter 525, Acts of 1910, chapter 344, General Acts of 1917, Part 1, and chapter 155, General Acts of 1918, of approximately \$1,220,987.57 for co-operative work, in repairing, maintaining and improving certain public ways, and for other road work for which the towns and cities made contributions. All such work was carried out in conformity with contracts, specifications and plans approved by the Division.

PETITIONS, MEETINGS AND HEARINGS.

In addition to the regular weekly meetings of the Division throughout the year, numerous hearings and conferences have been held, including the annual meeting and hearing in the several counties in the Commonwealth, for the open discussion of questions relative to the public ways, as required by chapter 344, General Acts of 1917, Part 1, section 2; hearings on petitions for the relocation or extension of street railway tracks on State Highways in Boston, Blackstone, Easton, Lawrence, Methuen, Northbridge, Somerset and Shrewsbury; on appeals from action taken by the Registrar of Motor Vehicles on revocation of certain licenses to operate motor vehicles; on the subject of removal of snow from highways; on the matter of billboard advertising; and on appeal from action taken by the town of Avon changing the name of a certain street.

Petitions were received and contracts signed during the year, as follows: —

	Petitions.	Contracts.
State highways . . . . .	13	29
Work under chapter 525, Acts of 1910 . . . . .	79	112
Work under chapter 344, General Acts of 1917, Part 1, section 23	27	27
Work under chapter 155, General Acts of 1918 . . . . .	99	98
Totals . . . . .	218	266



GENERAL STATEMENT AS TO SURVEYS, PLANS, ESTIMATES  
AND OTHER WORK DURING THE YEAR.

Preliminary surveys, plans and estimates were made on contemplated State highways in 34 towns, covering an aggregate distance of 61.03 miles. Lines and grade for construction work on State highways were made in 30 towns, covering an aggregate distance of 53.04 miles, and for resurfacing work in 7 towns, covering an aggregate distance of 7.60 miles.

Final surveys were made on completed State highways in 16 towns, covering an aggregate distance of 17.74 miles, and on roads other than State highways in 24 towns, covering an aggregate distance of 22.84 miles.

On "small town" and Motor Vehicle Fees Fund work, preliminary surveys, including plans and profiles, were made in 34 towns, covering an aggregate distance of 24.54 miles. Lines and grade for construction have been made on these roads in 47 towns, covering an aggregate distance of 37.20 miles. In addition to the above, surveys have been made in 5 towns, covering an aggregate distance of 3.16 miles, said roads to be constructed by the towns; and lines and grade for construction for this class have been made in 3 towns, covering an aggregate distance of .97 mile.

In connection with work in the five western counties of the State surveys have been made in 1 town, covering an aggregate distance of .45 mile, and lines and grade for construction have been made in 4 towns, covering an aggregate distance of 8.13 miles.

Layout plans have been made in 24 towns, covering an aggregate distance of 42.17 miles.

Plans to accompany decrees for street railway locations on State highways have been made in 7 towns.

Special surveys, plans, etc., have been made in 15 towns, covering an aggregate distance of 17.37 miles; and lines and grade for construction have been made in 9 towns, covering an aggregate distance of 7.06 miles.

## STATE HIGHWAY CONSTRUCTION.

Construction has been completed during the year ending Nov. 30, 1920, on about 22.4 miles of State highway, portions of which were laid out in 1919. Construction was commenced, but not completed, on over 22 miles of road in 11 cities and towns. Layouts were made of about 42.17 miles of State highway in 24 cities and towns. The total length of State highways at the end of the year was 1,353.96 miles.

## TREES ON STATE HIGHWAYS.

During the last sixteen years 44,720 trees have been planted on the borders of State highways, of which 590 were planted during the year covered by this report, the Division continuing the policy of planting quick-growing trees and hedges to replace guard rails.

## PERMITS.

There were 1,117 permits issued during the year for opening or occupying state highways.

## HIGHWAYS.

In addition to the 22.40 miles of State highway, construction was completed on 11.83 miles of highways under the provisions of the "small town" act (chapter 344, General Acts of 1917, Part 1, section 23); 52.09 miles of highways under chapter 525, Acts of 1910; and 34.92 miles of highways under other acts, making a total of 121.24 miles.

Of the above highways, .77 of a mile was of water-bound macadam; 39.54 miles of gravel; 6.08 miles of sand bound with asphalt; 38.04 miles of bituminous macadam, that is, macadam with bituminous binder incorporated in the top course; 5.06 miles of water-bound macadam with an oil or tar surface applied; 5.93 miles of crushed gravel with the top surface bound with asphalt; 16.40 miles of cement concrete; 4.65 miles of gravel with an oil surface applied; and 4.76 miles were earth highways, that is, surfaced with the best available material.



## RESURFACING AND WIDENING.

During the year 27.41 miles of State highway were resurfaced; 2.43 miles widened but not resurfaced; and 14.94 miles widened and resurfaced. The total mileage represents completed work.

## ENGINEERING ADVICE TO MUNICIPAL AUTHORITIES.

The Division furnished, without charge, engineering advice to 28 cities and towns in the Commonwealth, in accordance with the provisions of chapter 344, General Acts of 1917, Part 1, section 2.

## STATE HIGHWAYS.

Chapter 344, General Acts of 1917, Part 1, section 5, provides that —

If the county commissioners of a county, the mayor and aldermen of a city or the selectmen of a town adjudge that the public necessity and convenience require that the commonwealth lay out and take charge of a new or an existing way as a highway in whole or in part, in their county, city or town, they may apply by a petition in writing to the [Massachusetts Highway] commission, requesting that said way be laid out and taken charge of by the commonwealth.

Petitions under chapter 344 aforesaid have been received as follows: —

SELECTMEN OF GREAT BARRINGTON. Section of road leading from Sheffield to Great Barrington, beginning at the boundary between Great Barrington and Sheffield, at the northerly end of the State highway already constructed in Sheffield and extending northerly about two miles. Received Dec. 16, 1919.

SELECTMEN OF NORWELL. Section of road beginning at the boundary between Hingham and Norwell at Queen Ann Corners, and extending southeasterly to the boundary between Norwell and Hanover at Assinippi Village at the northwesterly end of the State highway already constructed in Hingham. Received Dec. 23, 1919.

SELECTMEN OF HINGHAM. Section of road locally known as Whiting Street, extending from the boundary between Weymouth and Hingham, to the boundary between Hingham and Norwell. Received Dec. 23, 1919.

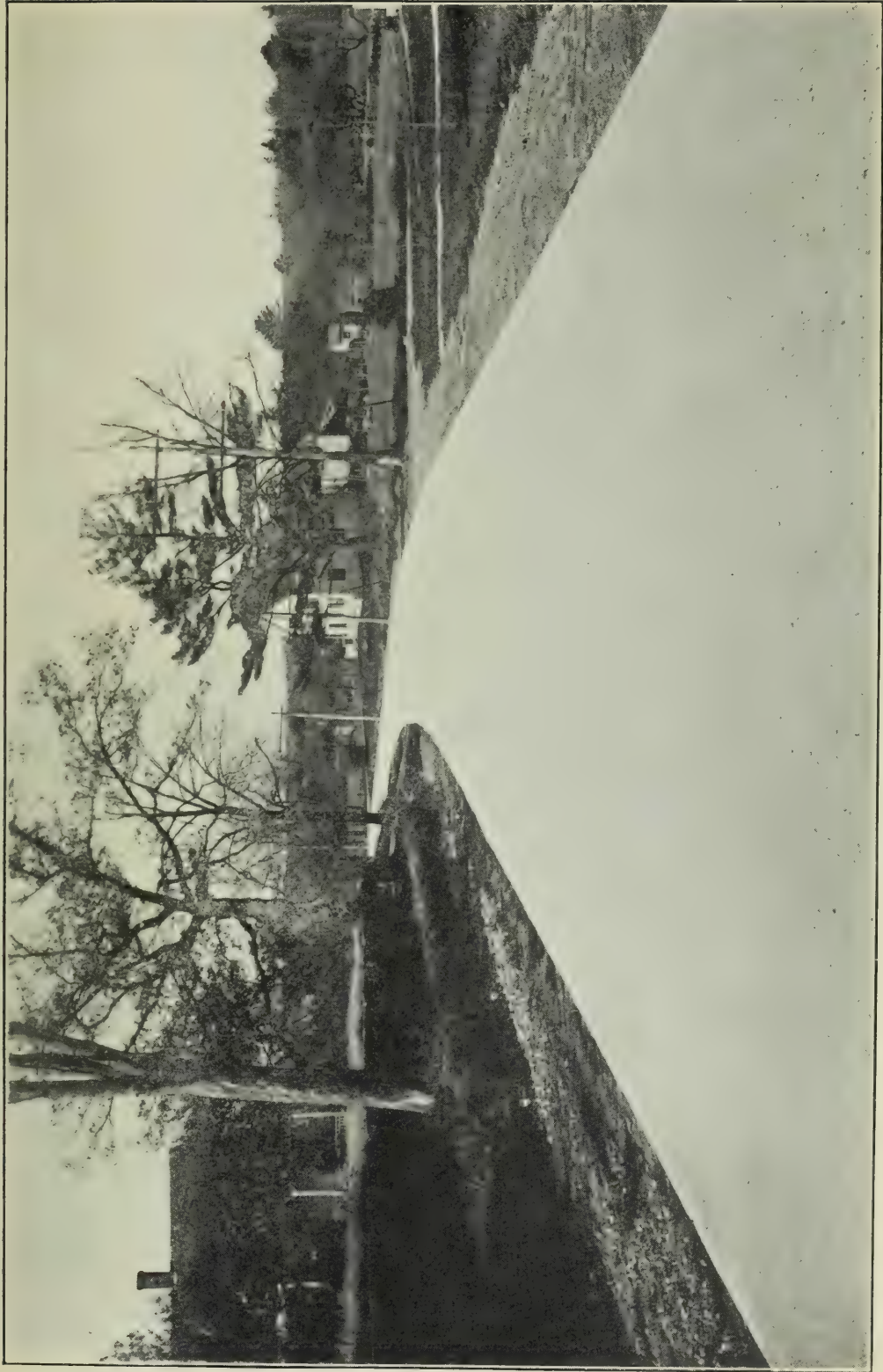
SELECTMEN OF HUNTINGTON. Road beginning at the Worthington line and extending along the River road to Huntington Village, thence southwesterly to the State highway leading from Chester to Russell. Received April 20, 1920. Layout was made May 11, 1920, and contract entered into.

SELECTMEN OF WINCHENDON. The main road leading northerly from Winchendon Village and extending to the New Hampshire line at a point westerly of the tracks of the Boston & Maine Railroad. Received Jan. 21, 1920.

SELECTMEN OF NATICK. Worcester Street extending from the boundary between Natick and Wellesley to the boundary between Natick and Framingham, about four miles in length. Received Dec. 29, 1919.

MAYOR AND ALDERMEN OF MEDFORD. Road leading from South Street to the Medford-Winchester line, and known as Winthrop Street. Received Jan. 9, 1920.





Norwell concrete road, 1920.





**SELECTMEN OF LEXINGTON.** Road beginning at Lowell Street, at its intersection with the present State highway, known as Summer Street Extension; thence northerly on Lowell Street to Maple Street; thence on Maple Street to Massachusetts Avenue; thence on Massachusetts Avenue to Middle Street, the present State highway. Received Jan. 10, 1920.

**SELECTMEN OF ACUSHNET.** Road leading from Acushnet Village north to Long Plain Village in Acushnet. Received Feb. 4, 1920.

**SELECTMEN OF SHREWSBURY.** Road leading from the junction of Maple Avenue and Boston Turnpike, said junction being about one mile easterly from the Worcester-Shrewsbury line; thence along said Turnpike to Shrewsbury-Northborough line. Received Feb. 4, 1920.

**MAYOR AND ALDERMEN OF LAWRENCE.** Road leading from the junction of Andover Street and the Salem Turnpike at Wilson's Corner; thence northwesterly along said turnpike in the town of North Andover to and along Winthrop Avenue to South Union Street. Received July 13, 1920.

**COUNTY COMMISSIONERS OF BARNSTABLE COUNTY.** Road leading from the existing State highway in Provincetown, in part over a new location to a point on Bradford Street about 200 feet easterly from the junction of Bradford and Allerton streets. Received Nov. 9, 1920. Layout was made Nov. 9, 1920. No contract has been entered into.

**COUNTY COMMISSIONERS OF WORCESTER COUNTY.** A road leading from the junction of the Brookfield road and Main Street in East Brookfield to the westerly end of the existing State highway, on the Spencer road, so called. Received Nov. 20, 1920.

The expenditures during the year in various counties for the construction of State highways were: —

COUNTY.	Amount.
Barnstable . . . . .	\$33,446 59
Berkshire . . . . .	169,268 42
Bristol . . . . .	52,637 96
Essex . . . . .	268,684 21
Franklin . . . . .	156,538 99
Hampden . . . . .	28 67
Hampshire . . . . .	203,392 71
Middlesex . . . . .	268,029 94
Norfolk . . . . .	28,496 67
Plymouth . . . . .	102,878 97
Worcester . . . . .	127,075 20

Details of the foregoing expenditures follow: —

*Barnstable County.*

Barnstable . . . . .	\$31,789 29
Mashpee . . . . .	196 72
Provincetown . . . . .	1,263 84
Sandwich . . . . .	196 74

*Berkshire County.*

Clarksburg . . . . .	9 10
Dalton . . . . .	4,194 23
Egremont . . . . .	47,314 80
Great Barrington . . . . .	12,359 11
Lanesborough . . . . .	37,944 16
Pittsfield . . . . .	4 55
Sheffield . . . . .	11,714 68
Stockbridge . . . . .	4 55
Windsor . . . . .	55,723 24

*Bristol County.*

Acushnet . . . . .	88 73
Fairhaven . . . . .	98 64
Freetown . . . . .	9,700 54
Taunton . . . . .	42,750 05

*Essex County.*

Andover . . . . .	5,697 28
Danvers . . . . .	57,714 51
Lynnfield . . . . .	18,199 31
Peabody . . . . .	77,321 93
Saugus . . . . .	109,751 18

*Franklin County.*

Greenfield . . . . .	109,755 57
Northfield . . . . .	12,123 78
Shelburne . . . . .	34,659 64

*Hampden County.*

Blandford . . . . .	28 67
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*Hampshire County.*

Amherst . . . . .	16,845 96
Cummington . . . . .	45,109 66
Huntington . . . . .	70,287 91
Northampton . . . . .	124 44
Ware . . . . .	71,024 74



*Middlesex County.*

Ashby . . . . .	\$6,361 82
Billerica . . . . .	117,846 63
Groton . . . . .	19,527 69
Lexington . . . . .	6,176 22
Littleton . . . . .	89,150 51
Lowell . . . . .	5 89
Wayland . . . . .	21,442 38
Woburn . . . . .	7,518 80

*Norfolk County.*

Braintree . . . . .	28,496 67
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*Plymouth County.*

Hingham . . . . .	39,459 02
Norwell . . . . .	50,220 57
Wareham . . . . .	13,199 38

*Worcester County.*

Athol . . . . .	7,750 18
Barre . . . . .	3,215 77
Charlton . . . . .	30,120 75
Leicester . . . . .	10,176 04
Northbridge . . . . .	38,900 38
Oxford . . . . .	4,678 02
Petersham . . . . .	29,898 61
Rutland . . . . .	58 12
Uxbridge . . . . .	13 30
Warren . . . . .	2,264 03

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Total . . . . . \$1,410,478 33

## CONSTRUCTION AND RESURFACING OF STATE HIGHWAYS.

(Chapter 344, General Acts of 1917, Part 1.)

The following contracts were entered into during the year for the construction and resurfacing of State highways in various municipalities:—

*Acton-Littleton.*

July 6, 1920, contract made with George E. Greenough of Acton for the construction of 2.18 miles of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$98,874.

To Dec. 1, 1920, about 98 per cent of the work had been completed.

Expenditure during 1920, \$97,592.97.

*Andover.*

Aug. 31, 1920, contract<sup>1</sup> made with George T. Seabury, Inc., of Providence, R. I., for the construction of 869 feet of State highway, and 1,682 feet of town road, consisting of bituminous macadam 21 to 24 feet wide. The proposal amounted to \$39,757.

Work completed Nov. 16, 1920.

Expenditure during 1920, \$39,406.64.

*Attleboro.*

April 6, 1920, contract made with the Lane Construction Corporation of Meriden, Conn., for the surfacing of 7,382 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$28,178.

Work completed July 20, 1920.

Expenditure during 1920, \$31,146.47.

*Barre.*

Oct. 26, 1920, contract made with G. Louis Burnham Company of Bristol, Conn., for the construction of 1,239 feet of State highway, this contract providing only for grading and drainage. The proposal amounted to \$4,461.50.

To Dec. 1, 1920, about 55 per cent of the work had been completed.

Expenditure during 1920, \$2,826.65.

*Billerica.*

April 28, 1920, contract made with James H. Fannon of Somerville for the construction of 3,168 feet of State highway of concrete construction, and a reinforced concrete bridge across Concord River. The proposal amounted to \$123,241.50.

To Dec. 1, 1920, about 95 per cent of the work had been completed.

Expenditure during 1920, \$103,586.76.

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<sup>1</sup> Subsequently assigned to the Lane Construction Corporation of Meriden, Conn.



*Danvers-Peabody.*

April 6, 1920, contract made with Hamlin & Nelson of Salem for the construction of 3,070 feet of State highway on Andover Street in Danvers and 2,777 feet in Peabody, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$43,922.50.

Work practically completed.

Expenditure during 1920, \$38,278.73.

*Eastham-Wellfleet.*

May 11, 1920, contract made with Thomas & Murphy of Keene, N. H., for the surfacing of 10.69 miles of State highway, consisting of bituminous concrete 18 feet wide. The proposal amounted to \$166,047.

To Dec. 1, 1920, about 90 per cent of the work had been completed.

Expenditure during 1920, \$147,365.69.

*Egremont.*

June 29, 1920, contract made with the Lanesborough Corporation of Meriden, Conn., for the construction of 6,147 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$39,783.50.

Work completed Nov. 30, 1920.

Expenditure during 1920, \$41,589.54.

*Huntington.*

May 11, 1920, contract made with Cordner & Montague of Springfield for the construction of 16,300 feet of State highway, consisting of bituminous macadam 18 feet wide, and a reinforced concrete bridge across Westfield River. The proposal amounted to \$182,232.

Work completed.

Expenditure during 1920, \$61,782.82.

*Leicester.*

April 13, 1920, contract made with McGuire & McGourty, Inc., of Worcester for surfacing 6,100 feet of State highway,

consisting of cement concrete 18 feet wide. The proposal amounted to \$44,601.50.

To Dec. 1, 1920, about 90 per cent of the work had been completed.

Expenditure during 1920, \$30,972.86.

Aug. 10, 1920, contract made with John MacDonald Construction Company of Boston for the construction of 3,300 feet of State highway, consisting of cement concrete 24 feet wide. The proposal amounted to \$51,731.

To Dec. 1, 1920, about 40 per cent of the work had been completed.

Expenditure during 1920, \$8,944.70.

#### *Littleton.*

April 20, 1920, contract made with the Framingham Construction and Supply Company for the construction of 1,212 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$8,630.

Work completed July 6, 1920.

Expended during 1920, \$9,703.89.

#### *Littleton-Groton.*

Dec. 23, 1919, contract made with John W. Duff, Incorporated, of Boston for the construction of 13,879 feet of State highway, consisting of cement concrete surface 18 feet wide in Littleton, and 20,389 feet in Groton. The proposal amounted to \$246,131.50.

To Dec. 1, 1920, about 35 per cent of the work had been completed.

Expended during 1920, \$85,823.86.

#### *Oxford.*

Oct. 26, 1920, contract made with the Hassam Paving Company of Worcester for the construction of 5,000 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$41,440.

To Dec. 1, 1920, about 10 per cent of the work had been completed.

Expended during 1920, \$4,111.96.



*Saugus-Lynnfield-Peabody-Danvers (Newburyport Turnpike).*

May 24, 1920, contract made with the Hassam Paving Company of Worcester for the construction of 27,022 feet of State highway (Newburyport Turnpike), consisting of cement concrete 18 feet wide. The proposal amounted to \$229,098.40.

To Dec. 1, 1920, about 40 per cent of the work had been completed.

Expenditure during 1920, \$86,171.36.

*Shrewsbury.*

Oct. 13, 1920, contract made with Alexander Palladino of Newton for the surfacing of 700 feet of State highway, consisting of bituminous macadam, there being two roadways, each 20 feet wide. The proposal amounted to \$9,413.50.

Work practically completed.

Expenditure during 1920, \$7,026.45.

*Ware.*

April 28, 1920, contract made with Luigi C. Carchia of Boston for the construction of 13,864 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$102,486.50.

To Dec. 1, 1920, about 65 per cent of the work had been completed.

Expenditure during 1920, \$62,430.49.

*Wayland.*

April 6, 1920, contract made with John H. McCusker of Waltham for the construction of 1,800 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$13,370.

Work completed July 20, 1920.

Expenditure during 1920, \$18,847.77.

*Westfield.*

Aug. 24, 1920, contract made with the Standard Engineering Company of Toledo, Ohio, for the reconstruction of the wooden

floor of the bridge across Little River, Westfield. The proposal amounted to \$9,271.96.

Work practically completed.

Expenditure during 1920, \$52.63.

Woburn.

Sept. 28, 1920, contract made with the city of Woburn for the construction of 8,240 feet of State highway, consisting of bituminous macadam 18 feet wide. The proposal amounted to \$48,413.50.

To Dec. 1, 1920, about 25 per cent of the work had been completed.

Expenditure during 1920, \$6,609.

MAINTENANCE OF STATE HIGHWAYS (FROM MOTOR VEHICLE FEES FUND).

(Chapter 344, General Acts of 1917, Part 1; chapter 225, Acts of 1920.)

The expenditures during the year in various counties were: —

COUNTY.	Amount.
Barnstable . . . . .	\$236,345 31
Berkshire . . . . .	250,189 53
Bristol . . . . .	131,460 54
Dukes . . . . .	12,548 66
Essex . . . . .	87,820 07
Franklin . . . . .	123,926 62
Hampden . . . . .	35,044 02
Hampshire . . . . .	29,367 49
Middlesex . . . . .	301,513 80
Nantucket . . . . .	829 22
Norfolk . . . . .	72,059 16
Plymouth . . . . .	71,712 88
Suffolk . . . . .	3,629 14
Worcester . . . . .	263,247 73



Details of the foregoing expenditures follow: —

*Barnstable County.*

Barnstable . . . . .	\$5,820 51
Bourne . . . . .	1,918 45
Brewster . . . . .	1,410 57
Chatham . . . . .	2,194 01
Dennis . . . . .	1,373 30
Eastham . . . . .	112,317 17
Falmouth . . . . .	3,390 70
Harwich . . . . .	755 41
Mashpee . . . . .	589 02
Orleans . . . . .	1,333 11
Provincetown . . . . .	889 63
Sandwich . . . . .	3,414 11
Truro . . . . .	36,337 79
Wellfleet . . . . .	58,959 16
Yarmouth . . . . .	5,642 37

*Berkshire County.*

Adams . . . . .	1,326 75
Becket . . . . .	46,734 80
Cheshire . . . . .	5,527 57
Clarksburg . . . . .	2,824 93
Dalton . . . . .	1,899 08
Egremont . . . . .	1,075 20
Florida . . . . .	15,084 53
Great Barrington . . . . .	1,811 41
Hancock . . . . .	66,301 02
Hinsdale . . . . .	1,262 02
Lanesborough . . . . .	1,177 81
Lee . . . . .	3,508 50
Lenox . . . . .	4,263 51
North Adams . . . . .	11,976 93
Pittsfield . . . . .	72,254 57
Richmond . . . . .	5,326 01
Savoy . . . . .	2,583 19
Sheffield . . . . .	2,120 12
Stockbridge . . . . .	1,358 51
Washington . . . . .	159 25
Williamstown . . . . .	514 92
Windsor . . . . .	1,098 90

*Bristol County.*

Acushnet . . . . .	2,168 98
Attleboro . . . . .	42,253 50
Berkley . . . . .	880 56

Dartmouth . . . . .	\$4,100 56
Dighton . . . . .	2,118 90
Easton . . . . .	110 48
Fairhaven . . . . .	676 21
Fall River . . . . .	128 77
Freetown . . . . .	779 06
Mansfield . . . . .	1,410 73
North Attleborough . . . . .	3,238 97
Norton . . . . .	3,464 46
Raynham . . . . .	3,119 78
Rehoboth . . . . .	3,495 16
Seekonk . . . . .	35,959 91
Somerset . . . . .	4,661 89
Swansea . . . . .	13,705 96
Taunton . . . . .	3,144 86
Westport . . . . .	6,041 80

*Dukes County.*

Chilmark . . . . .	3,925 90
Edgartown . . . . .	1,543 46
Gay Head . . . . .	4,143 91
Oak Bluffs . . . . .	1,432 05
Tisbury . . . . .	279 73
West Tisbury . . . . .	1,223 61

*Essex County.*

Amesbury . . . . .	2,232 75
Andover . . . . .	3,396 95
Beverly . . . . .	2,003 88
Danvers . . . . .	154 48
Essex . . . . .	686 41
Gloucester . . . . .	1,671 99
Groveland . . . . .	2,098 53
Hamilton . . . . .	2,898 23
Haverhill . . . . .	6,385 67
Ipswich . . . . .	1,679 58
Lawrence . . . . .	1,111 85
Lynn . . . . .	1,699 99
Merrimac . . . . .	2,432 69
Methuen . . . . .	5,638 26
Middleton . . . . .	252 30
Newbury . . . . .	2,116 63
Newburyport . . . . .	375 69
North Andover . . . . .	4,376 88
Rockport . . . . .	543 06



## HIGHWAYS.

27

Rowley . . . . .	\$1,589 12
Salem . . . . .	809 97
Salisbury . . . . .	2,655 05
Saugus . . . . .	1,037 55
Swampscott . . . . .	532 00
Wenham . . . . .	34,452 57
West Newbury . . . . .	4,987 99

*Franklin County.*

Ashfield . . . . .	1,698 88
Bernardston . . . . .	36,970 57
Buckland . . . . .	3,466 23
Charlemont . . . . .	13,015 37
Colrain . . . . .	2,602 70
Conway . . . . .	2,985 88
Deerfield . . . . .	5,540 37
Erving . . . . .	4,041 49
Gill . . . . .	108 29
Greenfield . . . . .	33,320 04
Montague . . . . .	3,082 03
Northfield . . . . .	6,214 22
Orange . . . . .	1,693 63
Shelburne . . . . .	7,474 58
Sunderland . . . . .	778 96
Whately . . . . .	933 38

*Hampden County.*

Agawam . . . . .	340 64
Blandford . . . . .	2,650 77
Brimfield . . . . .	2,384 57
Chester . . . . .	3,841 35
Chicopee . . . . .	2,535 23
East Longmeadow . . . . .	1,105 83
Holyoke . . . . .	1,201 26
Monson . . . . .	508 58
Palmer . . . . .	6,764 02
Russell . . . . .	6,777 47
Wales . . . . .	1,594 63
West Springfield . . . . .	694 33
Westfield . . . . .	3,186 67
Wilbraham . . . . .	1,458 67

*Hampshire County.*

Amherst . . . . .	2,901 91
Belchertown . . . . .	1,664 09

Cummington . . . . .	\$466 23
Easthampton . . . . .	827 65
Goshen . . . . .	1,226 07
Granby . . . . .	3,952 22
Hadley . . . . .	2,152 74
Hatfield . . . . .	266 52
Huntington . . . . .	3,325 64
Northampton . . . . .	1,306 24
South Hadley . . . . .	4,010 80
Southampton . . . . .	527 68
Ware . . . . .	3,998 04
Williamsburg . . . . .	2,741 66

*Middlesex County.*

Acton . . . . .	106,197 29
Arlington . . . . .	401 41
Ashby . . . . .	7,899 66
Ashland . . . . .	835 61
Ayer . . . . .	566 11
Bedford . . . . .	149 23
Billerica . . . . .	1,145 27
Boxborough . . . . .	1,809 76
Burlington . . . . .	3,121 95
Chelmsford . . . . .	8,838 21
Concord . . . . .	1,178 29
Dracut . . . . .	3,011 75
Framingham . . . . .	1,771 18
Groton . . . . .	250 66
Holliston . . . . .	1,586 21
Hudson . . . . .	435 66
Lexington . . . . .	1,543 66
Lincoln . . . . .	865 60
Littleton . . . . .	29,604 32
Lowell . . . . .	2,734 53
Malden . . . . .	12 30
Marlborough . . . . .	3,427 44
Medford . . . . .	309 67
Melrose . . . . .	354 04
Natick . . . . .	1,379 34
Newton . . . . .	351 30
North Reading . . . . .	1,502 14
Pepperell . . . . .	1,849 50
Reading . . . . .	2,265 40
Shirley . . . . .	244 03
Somerville . . . . .	325 76



## HIGHWAYS.

29

Stoneham . . . . .	\$31,950 30
Sudbury . . . . .	1,907 75
Tewksbury . . . . .	4,259 99
Townsend . . . . .	5,231 48
Tyngsborough . . . . .	3,465 53
Watertown . . . . .	542 79
Wayland . . . . .	1,962 69
Westford . . . . .	6,399 54
Weston . . . . .	1,148 22
Wilmington . . . . .	55,008 01
Winchester . . . . .	1,769 02
Woburn . . . . .	1,901 20

*Nantucket County.*

Nantucket . . . . .	829 22
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*Norfolk County.*

Avon . . . . .	357 31
Bellingham . . . . .	892 80
Braintree . . . . .	1,196 15
Canton . . . . .	2,733 82
Cohasset . . . . .	3,338 04
Dedham . . . . .	1,466 46
Dover . . . . .	950 66
Foxborough . . . . .	1,357 54
Franklin . . . . .	954 80
Holbrook . . . . .	1,062 52
Milton . . . . .	576 58
Needham . . . . .	1,247 66
Norfolk . . . . .	1,734 09
Norwood . . . . .	2,454 12
Plainville . . . . .	2,474 50
Quincy . . . . .	10,395 94
Randolph . . . . .	6,179 91
Sharon . . . . .	622 29
Stoughton . . . . .	9,261 68
Walpole . . . . .	5,029 11
Wellesley . . . . .	117 98
Westwood . . . . .	268 23
Weymouth . . . . .	11,652 73
Wrentham . . . . .	5,734 24

*Plymouth County.*

Abington . . . . .	1,921 96
Bridgewater . . . . .	3,753 16

Brockton . . . . .	\$548 08
Duxbury . . . . .	1,414 38
East Bridgewater . . . . .	5,113 39
Hanover . . . . .	1,205 75
Hingham . . . . .	2,930 39
Kingston . . . . .	548 94
Lakeville . . . . .	5,361 79
Marion . . . . .	1,856 53
Marshfield . . . . .	10,471 02
Mattapoisett . . . . .	5,811 37
Middleborough . . . . .	13,803 06
Pembroke . . . . .	893 45
Plymouth . . . . .	1,113 17
Rochester . . . . .	2,160 43
Rockland . . . . .	1,430 69
Scituate . . . . .	1,305 21
Wareham . . . . .	5,636 64
West Bridgewater . . . . .	2,144 24
Whitman . . . . .	2,289 23

*Suffolk County.*

Boston . . . . .	1,403 43
Chelsea . . . . .	274 99
Revere . . . . .	1,950 72

*Worcester County.*

Ashburnham . . . . .	20,171 02
Athol . . . . .	1,813 85
Auburn . . . . .	2,928 57
Barre . . . . .	5,555 09
Blackstone . . . . .	1,888 21
Brookfield . . . . .	2,223 03
Charlton . . . . .	4,995 43
Douglas . . . . .	1,466 27
Dudley . . . . .	2,328 51
Fitchburg . . . . .	807 93
Gardner . . . . .	2,322 82
Grafton . . . . .	3,883 00
Hardwick . . . . .	913 06
Harvard . . . . .	1,353 95
Holden . . . . .	2,864 15
Hopedale . . . . .	203 51
Lancaster . . . . .	1,052 03
Leicester . . . . .	38,817 24
Leominster . . . . .	1,811 10
Lunenburg . . . . .	86,578 10

Mendon . . . . .	\$482 42
Milford . . . . .	1,216 00
Millbury . . . . .	1,608 86
Millville . . . . .	1,301 62
New Braintree . . . . .	134 11
North Brookfield . . . . .	793 70
Northborough . . . . .	1,781 07
Northbridge . . . . .	753 09
Oakham . . . . .	1,924 40
Oxford . . . . .	2,124 68
Paxton . . . . .	4,071 69
Petersham . . . . .	3,483 65
Phillipston . . . . .	517 63
Princeton . . . . .	1,126 66
Rutland . . . . .	3,366 62
Shrewsbury . . . . .	9,424 42
Southborough . . . . .	1,619 31
Southbridge . . . . .	216 78
Spencer . . . . .	883 76
Sterling . . . . .	2,726 42
Sturbridge . . . . .	1,234 78
Sutton . . . . .	3,302 82
Templeton . . . . .	5,567 62
Upton . . . . .	1,639 84
Uxbridge . . . . .	2,429 53
Warren . . . . .	763 63
Webster . . . . .	807 18
West Boylston . . . . .	765 29
West Brookfield . . . . .	1,603 50
Westborough . . . . .	2,433 65
Westminster . . . . .	5,765 14
Winchendon . . . . .	11,466 45
Worcester . . . . .	1,934 54
Total, . . . . .	<sup>1</sup> \$1,619,694 17

<sup>1</sup> To this amount should be added items totalling \$1,637.93 for marking routes, and for tar and oil analysis, etc.



MAINTENANCE OF STATE HIGHWAYS (FROM REVENUE APPROPRIATIONS).

(Chapter 344, General Acts of 1917, Part 1; chapter 225, Acts of 1920.)

The expenditures during the year in various counties were:—

COUNTY.	Amount.
Barnstable . . . . .	\$28,010 24
Berkshire . . . . .	32,322 68
Bristol . . . . .	32,809 71
Dukes . . . . .	4,662 97
Essex . . . . .	50,495 54
Franklin . . . . .	16,125 00
Hampden . . . . .	16,009 76
Hampshire . . . . .	11,070 18
Middlesex . . . . .	54,756 05
Nantucket . . . . .	4,130 91
Norfolk . . . . .	23,395 22
Plymouth . . . . .	16,438 18
Suffolk . . . . .	3,445 53
Worcester . . . . .	65,217 47

Details of the foregoing expenditures follow:—

<i>Barnstable County.</i>	
Barnstable . . . . .	\$3,704 87
Bourne . . . . .	2,171 39
Brewster . . . . .	1,319 08
Chatham . . . . .	2,178 42
Dennis . . . . .	1,694 68
Eastham . . . . .	1,312 10
Falmouth . . . . .	3,709 63
Harwich . . . . .	1,055 36
Mashpee . . . . .	591 36
Orleans . . . . .	1,053 75
Provincetown . . . . .	1,526 39
Sandwich . . . . .	1,749 10
Truro . . . . .	2,182 54
Wellfleet . . . . .	1,886 19
Yarmouth, North } . . . . .	1,875 38
Yarmouth, South }	

*Berkshire County.*

Adams . . . . .	\$311 41
Becket . . . . .	1,664 86
Cheshire . . . . .	1,222 21
Clarksburg . . . . .	569 84
Dalton . . . . .	720 41
Egremont . . . . .	1,383 66
Florida . . . . .	7,223 95
Great Barrington . . . . .	2,296 99
Hancock . . . . .	179 54
Hinsdale . . . . .	429 18
Lanesborough . . . . .	365 74
Lee . . . . .	2,800 98
Lenox . . . . .	1,688 63
New Marlborough . . . . .	59 30
North Adams . . . . .	4,831 14
Pittsfield . . . . .	1,395 53
Richmond . . . . .	783 50
Savoy . . . . .	511 38
Sheffield . . . . .	1,592 85
Stockbridge . . . . .	1,853 09
Williamstown . . . . .	288 49
Windsor . . . . .	150 00

*Bristol County.*

Acushnet . . . . .	998 04
Attleboro . . . . .	1,462 00
Berkley . . . . .	427 81
Dartmouth . . . . .	2,903 09
Dighton . . . . .	1,134 90
Easton . . . . .	184 11
Fairhaven . . . . .	489 55
Fall River . . . . .	—
Freetown . . . . .	272 22
Mansfield . . . . .	159 41
North Attleborough . . . . .	2,831 92
Norton . . . . .	1,749 98
Raynham . . . . .	1,408 79
Rehoboth . . . . .	1,677 76
Seekonk . . . . .	1,563 78
Somerset . . . . .	4,087 38
Swansea . . . . .	7,815 23
Taunton . . . . .	1,554 89
Westport . . . . .	2,088 85

*Dukes County.*

Chilmark . . . . .	\$1,187 55
Edgartown . . . . .	922 10
Gay Head . . . . .	723 75
Oak Bluffs . . . . .	1,181 99
Tisbury . . . . .	13 80
West Tisbury . . . . .	633 78

*Essex County.*

Amesbury . . . . .	4,205 10
Andover . . . . .	2,084 80
Beverly . . . . .	2,387 30
Danvers . . . . .	109 49
Essex . . . . .	581 53
Gloucester . . . . .	2,898 23
Groveland . . . . .	1,954 77
Hamilton . . . . .	478 09
Haverhill . . . . .	6,555 52
Ipswich . . . . .	3,330 98
Lawrence . . . . .	762 76
Lynn . . . . .	1,147 19
Merrimac . . . . .	2,445 82
Methuen . . . . .	2,825 60
Middleton . . . . .	48 37
Newbury . . . . .	3,130 91
Newburyport . . . . .	1,541 60
North Andover . . . . .	3,606 33
Rockport . . . . .	1,365 55
Rowley . . . . .	1,569 99
Salem . . . . .	607 83
Salisbury . . . . .	1,720 71
Saugus . . . . .	2,023 62
Swampscott . . . . .	454 86
Wenham . . . . .	695 12
West Newbury . . . . .	1,963 47

*Franklin County.*

Ashfield . . . . .	78 79
Bernardston . . . . .	734 10
Buckland . . . . .	716 81
Charlemont . . . . .	4,818 30
Colrain . . . . .	221 85
Conway . . . . .	783 16
Deerfield . . . . .	1,632 39
Erving . . . . .	1,186 32



## HIGHWAYS.

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Greenfield . . . . .	\$171 10
Montague . . . . .	872 81
Northfield . . . . .	1,661 83
Orange . . . . .	1,119 74
Shelburne . . . . .	1,453 11
Sunderland . . . . .	228 42
Whately . . . . .	446 27

*Hampden County.*

Agawam . . . . .	1,711 72
Blandford . . . . .	629 63
Brimfield . . . . .	337 67
Chester . . . . .	651 00
Chicopee . . . . .	2,081 73
East Longmeadow . . . . .	706 20
Holyoke . . . . .	683 10
Monson . . . . .	149 10
Palmer . . . . .	3,435 60
Russell . . . . .	2,320 38
Wales . . . . .	133 66
West Springfield . . . . .	74 90
Westfield . . . . .	2,365 03
Wilbraham . . . . .	730 04

*Hampshire County.*

Amherst . . . . .	1,051 31
Belchertown . . . . .	649 47
Easthampton . . . . .	271 07
Goshen . . . . .	208 12
Granby . . . . .	1,274 39
Hadley . . . . .	1,209 13
Hatfield . . . . .	49 85
Huntington . . . . .	1,503 70
Northampton . . . . .	500 93
South Hadley . . . . .	2,253 99
Southampton . . . . .	204 05
Ware . . . . .	1,062 01
Williamsburg . . . . .	832 16

*Middlesex County.*

Acton . . . . .	2,539 67
Arlington . . . . .	197 12
Ashby . . . . .	1,275 59
Ashland . . . . .	1,101 91
Ayer . . . . .	534 13
Bedford . . . . .	1,036 84

Billerica . . . . .	\$1,150 97
Boxborough . . . . .	1,109 28
Burlington . . . . .	1,639 66
Chelmsford . . . . .	5,686 01
Concord . . . . .	613 74
Dracut . . . . .	1,438 25
Framingham . . . . .	2,583 20
Groton . . . . .	210 49
Holliston . . . . .	846 83
Hudson . . . . .	714 09
Lexington . . . . .	1,158 58
Lincoln . . . . .	168 14
Littleton . . . . .	2,569 70
Lowell . . . . .	2,575 96
Malden . . . . .	144 37
Marlborough . . . . .	2,324 60
Medford . . . . .	60 56
Melrose . . . . .	1,155 33
Natick . . . . .	766 15
Newton . . . . .	284 50
North Reading . . . . .	1,060 44
Pepperell . . . . .	925 18
Reading . . . . .	992 51
Shirley . . . . .	306 84
Somerville . . . . .	280 10
Stoneham . . . . .	1,604 54
Sudbury . . . . .	295 19
Tewksbury . . . . .	172 61
Townsend . . . . .	1,740 53
Tyngsborough . . . . .	4,427 80
Watertown . . . . .	698 41
Wayland . . . . .	355 52
Westford . . . . .	2,164 85
Weston . . . . .	736 40
Wilmington . . . . .	749 14
Winchester . . . . .	1,470 74
Woburn . . . . .	2,889 58

*Nantucket County.*

Nantucket . . . . .	4,130 91
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*Norfolk County.*

Avon . . . . .	114 42
Bellingham . . . . .	995 28
Braintree . . . . .	1,001 14
Canton . . . . .	1,690 36
Cohasset . . . . .	322 64

Dedham . . . . .	\$908 54
Dover . . . . .	965 68
Foxborough . . . . .	760 57
Franklin . . . . .	1,360 46
Holbrook . . . . .	422 08
Milton . . . . .	269 98
Needham . . . . .	743 39
Norfolk . . . . .	485 74
Norwood . . . . .	1,384 83
Plainville . . . . .	2,513 62
Quincy . . . . .	569 98
Randolph . . . . .	451 29
Stoughton . . . . .	1,479 17
Walpole . . . . .	1,933 71
Wellesley . . . . .	353 47
Westwood . . . . .	92 20
Weymouth . . . . .	2,455 09
Wrentham . . . . .	2,121 58

*Plymouth County.*

Abington . . . . .	892 42
Bridgewater . . . . .	869 73
Brockton . . . . .	424 20
Duxbury . . . . .	854 81
East Bridgewater . . . . .	200 99
Hanover . . . . .	571 91
Hingham . . . . .	727 21
Kingston . . . . .	157 18
Lakeville . . . . .	2,429 01
Marion . . . . .	975 63
Marshfield . . . . .	443 49
Mattapoisett . . . . .	224 46
Middleborough . . . . .	952 86
Pembroke . . . . .	627 74
Plymouth . . . . .	600 41
Rochester . . . . .	945 56
Rockland . . . . .	1,007 93
Scituate . . . . .	564 87
Wareham . . . . .	2,008 61
West Bridgewater . . . . .	460 01
Whitman . . . . .	499 15

*Suffolk County.*

Boston . . . . .	740 62
Chelsea . . . . .	674 00
Revere . . . . .	2,030 91



*Worcester County.*

Ashburnham . . . . .	\$3,252 37
Athol . . . . .	1,960 35
Auburn . . . . .	2,162 46
Barre . . . . .	1,706 81
Blackstone . . . . .	2,157 39
Brookfield . . . . .	1,098 65
Charlton . . . . .	2,293 12
Douglas . . . . .	394 00
Dudley . . . . .	1,684 39
Fitchburg . . . . .	464 92
Gardner . . . . .	726 31
Grafton . . . . .	3,285 28
Hardwick . . . . .	233 07
Harvard . . . . .	828 90
Holden . . . . .	2,840 95
Hopedale . . . . .	236 42
Lancaster . . . . .	915 25
Leicester . . . . .	2,378 81
Leominster . . . . .	1,412 25
Lunenburg . . . . .	1,402 62
Mendon . . . . .	316 58
Milford . . . . .	715 30
Millbury . . . . .	1,092 24
Millville . . . . .	1,598 96
New Braintree . . . . .	9 48
North Brookfield . . . . .	128 19
Northborough . . . . .	596 36
Northbridge . . . . .	168 90
Oakham . . . . .	558 09
Oxford . . . . .	1,140 05
Paxton . . . . .	323 39
Petersham . . . . .	1,402 64
Phillipston . . . . .	523 43
Princeton . . . . .	9 69
Rutland . . . . .	1,953 76
Shrewsbury . . . . .	1,552 28
Southborough . . . . .	945 66
Southbridge . . . . .	124 86
Spencer . . . . .	442 75
Sterling . . . . .	2,521 96
Sturbridge . . . . .	471 97
Sutton . . . . .	1,130 45
Templeton . . . . .	1,331 96
Upton . . . . .	1,380 51

Uxbridge . . . . .	\$2,765 77
Warren . . . . .	395 10
Webster . . . . .	817 71
West Boylston . . . . .	512 44
West Brookfield . . . . .	672 36
Westborough . . . . .	869 27
Westminster . . . . .	2,555 34
Winchendon . . . . .	3,474 63
Worcester . . . . .	1,281 07
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Total . . . . .	\$358,889 44

The amounts expended for maintenance of State highways, the average expenditure per mile in 1920 for maintenance, the average cost per mile per year for each municipality, the number of miles under maintenance, and the amounts to be assessed upon municipalities for maintenance under 1920 expenditures, by authority of chapter 344, Part 1, General Acts of 1917, are shown in the following table: —

TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Totals to 1920.	During 1920.	Total.	Totals to 1920.	During 1920.	Total.
Abington . . . . .	\$8,868 14	\$892 42	\$9,760 56	\$32,522 22	\$1,921 96	\$34,444 18
Acton . . . . .	21,384 64	2,539 67	23,924 31	103,059 12	106,197 29	209,256 41
Acushnet . . . . .	12,673 89	998 04	13,671 93	38,483 27	2,168 98	40,652 25
Adams . . . . .	8,280 57	311 41	8,591 98	6,019 36	1,326 75	7,346 11
Agawam . . . . .	17,759 56	1,711 72	19,471 28	19,549 97	340 64	19,890 61
Amesbury . . . . .	10,329 71	4,205 10	14,534 81	6,538 93	2,232 75	8,771 68
Amherst . . . . .	6,743 91	1,051 31	7,795 22	9,755 30	2,901 91	12,657 21
Andover . . . . .	26,038 87	2,084 80	28,123 67	88,000 57	3,396 95	91,397 52
Arlington . . . . .	340 80	197 12	537 92	207 34	401 41	608 75
Ashburnham . . . . .	13,376 17	3,252 37	16,628 54	24,369 89	20,171 02	44,540 91
Ashby . . . . .	15,266 78	1,275 59	16,542 37	43,323 70	7,899 66	51,223 36
Ashfield . . . . .	4,816 56	78 79	4,895 35	7,185 70	1,698 88	8,884 58
Ashland . . . . .	6,720 66	1,101 91	7,822 57	5,692 04	835 61	6,527 65
Athol . . . . .	15,714 41	1,960 35	17,674 76	43,436 44	1,813 85	45,250 29
Attleboro . . . . .	13,790 53	1,462 00	15,252 53	44,362 59	42,253 50	86,616 09
Auburn . . . . .	42,520 36	2,162 46	44,682 82	71,205 21	2,928 57	74,133 78
Avon . . . . .	602 17	114 42	716 59	1,972 74	357 31	2,330 05
Ayer . . . . .	2,904 55	534 13	3,438 68	4,261 83	566 11	4,827 94
Barnstable . . . . .	27,977 35	3,704 87	31,682 22	36,491 32	5,820 51	42,311 83
Barre . . . . .	16,011 70	1,706 81	17,718 51	23,960 48	5,555 09	29,515 57
Becket . . . . .	40,121 92	1,664 86	41,786 78	196,074 01	46,734 80	242,808 81
Bedford . . . . .	4,992 89	1,036 84	6,029 73	7,868 95	149 23	8,018 18
Belchertown . . . . .	5,118 06	649 47	5,767 53	5,131 32	1,664 09	6,795 41
Bellingham . . . . .	5,325 05	995 28	6,320 33	7,789 96	892 80	8,682 76
Berkley . . . . .	2,343 61	427 81	2,771 42	1,722 55	880 56	2,603 11
Bernardston . . . . .	9,147 25	734 10	9,881 35	13,207 85	36,970 57	50,178 42
Beverly . . . . .	56,668 95	2,387 30	59,056 25	159,315 45	2,003 88	161,319 33
Billerica . . . . .	3,847 80	1,150 97	4,998 77	4,615 35	1,145 27	5,760 62
Blackstone . . . . .	12,335 50	2,157 39	14,492 89	11,682 49	1,888 21	13,570 70
Blandford . . . . .	1,449 43	629 63	2,079 06	7,212 38	2,650 77	9,863 15
Boston . . . . .	12,161 19	740 62	12,901 81	73,852 72	1,403 43	75,256 15
Bourne . . . . .	16,758 70	2,171 39	18,930 09	46,879 99	1,918 45	48,798 44
Boxborough . . . . .	8,745 06	1,109 28	9,854 34	10,262 77	1,809 76	12,072 53
Braintree . . . . .	4,070 17	1,001 14	5,071 31	13,030 12	1,196 15	14,226 27
Brewster . . . . .	17,676 64	1,319 08	18,995 72	42,813 61	1,410 57	44,224 18
Bridgewater . . . . .	8,580 52	869 73	9,450 25	28,175 54	3,753 16	31,928 70
Brimfield . . . . .	7,166 05	337 67	7,503 72	15,264 39	2,384 57	17,648 96
Brockton . . . . .	16,485 53	424 20	16,909 73	30,833 35	548 08	31,381 43
Brookfield . . . . .	19,907 27	1,098 65	21,005 92	42,881 86	2,223 03	45,104 89
Buckland . . . . .	18,149 66	716 81	18,866 47	43,776 17	3,466 23	47,242 40
Burlington . . . . .	12,620 33	1,639 66	14,259 99	10,863 43	3,121 95	13,985 38
Canton . . . . .	13,784 49	1,690 36	15,474 85	54,076 87	2,733 82	56,810 69
Charlemont . . . . .	15,885 77	4,818 30	20,704 07	26,078 68	13,015 37	39,094 05
Charlton . . . . .	21,350 68	2,293 12	23,643 80	25,339 68	4,995 43	30,335 11
Chatham . . . . .	13,518 42	2,178 42	15,696 84	33,277 97	2,194 01	35,471 98
Chelmsford . . . . .	20,948 12	5,686 01	26,634 13	25,265 55	8,838 21	34,103 76
Chelsea . . . . .	8,950 06	674 00	9,624 06	20,160 08	274 99	20,435 07
Cheshire . . . . .	17,389 03	1,222 21	18,611 24	15,165 07	5,525 57	20,692 64
Chester . . . . .	20,691 56	651 00	21,342 56	28,842 15	3,841 35	32,683 50
Chicopee . . . . .	28,272 10	2,081 73	30,353 83	51,614 76	2,535 23	54,149 99
Chilmark . . . . .	9,160 31	1,187 55	10,347 86	16,473 27	3,925 90	20,399 17
Clarksburg . . . . .	6,309 10	569 84	6,878 94	6,804 59	2,824 93	9,629 52
Cohasset . . . . .	8,401 44	322 64	8,724 08	43,188 43	3,338 04	46,526 47
Colrain . . . . .	4,779 57	221 85	5,001 42	3,908 16	2,602 70	6,510 86
Concord . . . . .	22,538 50	613 74	23,152 24	115,412 54	1,178 29	116,590 83
Conway . . . . .	881 02	783 16	1,664 18	1,364 84	2,985 88	4,350 72
Cummington . . . . .	-	-	-	-	466 23	466 23
Dalton . . . . .	12,005 72	720 41	12,726 13	10,043 50	1,899 08	11,942 58
Danvers . . . . .	290 42	109 49	399 91	168 58	154 48	323 06
Dartmouth . . . . .	16,430 20	2,903 09	19,333 29	91,479 53	4,100 56	95,580 09
Dedham . . . . .	3,052 88	908 54	3,961 42	5,525 73	1,466 46	6,992 19
Deerfield . . . . .	32,899 66	1,632 39	34,532 05	69,085 71	5,540 37	74,626 08
Dennis . . . . .	25,931 55	1,694 68	27,626 23	39,068 53	1,373 30	40,441 83
Dighton . . . . .	7,314 49	1,134 90	8,449 39	47,216 27	2,118 90	49,335 17
Douglas . . . . .	6,430 35	394 00	6,824 35	11,381 25	1,466 27	12,847 52
Dover . . . . .	7,504 75	965 68	8,470 43	6,002 21	950 66	6,952 87
Dracut . . . . .	6,365 12	1,438 25	7,803 37	7,835 95	3,011 75	10,847 70
Dudley . . . . .	10,181 04	1,684 39	11,865 43	14,633 70	2,328 51	16,962 21
Duxbury . . . . .	13,100 15	854 81	13,954 96	50,448 17	1,414 38	51,862 55
East Bridgewater . . . . .	579 18	200 99	780 17	22,161 42	5,113 39	27,274 81
East Longmeadow . . . . .	6,573 50	706 20	7,279 70	8,100 55	1,105 83	9,206 38



# HIGHWAYS.

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Total expended.	AVERAGE EXPENDITURE PER MILE IN 1920.			Average Cost per Mile per Year.	Length under Main- tenance (Miles).	Amount to be assessed on Cities and Towns under 1920 Ex- penditures.
	From Revenue Appro- priation.	From Motor Vehicle Fees Fund.	Total.			
\$44,204 74	\$150 21	\$323 51	\$473 72	\$600 20	5.941	\$1,188 20
233,180 72	322 82	13,499 08	13,821 90	1,985 80	7.867	1,573 40
54,324 18	216 87	471 31	688 18	791 07	4.602	460 20
15,938 09	153 56	654 22	807 78	517 40	2.028	819 08
39,361 89	428 68	85 31	513 99	756 31	3.993	798 60
23,306 49	1,276 21	677 62	1,953 83	443 74	3.295	3,218 92
20,452 43	148 97	411 21	560 18	567 67	7.057	1,976 61
119,521 19	478 49	779 65	1,258 14	1,366 88	4.357	2,740 88
1,146 67	151 98	309 49	461 47	884 09	1.297	299 26
61,169 45	529 01	3,280 91	3,809 92	2,484 14	6.148	614 80
67,765 73	184 33	1,141 57	1,325 90	689 38	6.920	346 00
13,779 93	49 00	1,056 52	1,105 52	387 48	1.608	160 80
14,350 22	344 67	261 37	606 04	344 62	3.197	319 70
62,925 05	351 32	325 06	676 38	982 50	5.580	1,887 10
101,868 62	431 40	12,467 84	12,899 24	1,744 89	3.389	5,840 60
118,816 60	408 09	552 66	960 75	1,111 01	5.299	1,059 80
3,046 64	69 90	218 27	288 17	422 91	1.637	163 70
8,266 62	153 57	162 77	316 34	518 80	3.478	550 12
73,994 05	186 77	293 42	480 19	408 63	19.837	4,762 69
47,234 08	281 61	916 53	1,198 14	752 62	6.061	1,212 20
284,595 59	93 96	2,637 70	2,731 66	2,298 31	17.718	885 80
14,047 91	629 53	90 60	720 13	472 17	1.647	329 40
12,562 94	201 20	515 51	716 71	286 47	3.228	322 80
15,003 09	312 98	280 75	593 73	315 06	3.180	318 00
5,374 53	340 07	699 97	1,040 04	379 45	1.258	62 90
60,059 77	83 64	4,212 21	4,295 85	1,287 32	8.777	438 85
220,375 58	420 30	352 80	773 10	2,143 46	5.680	2,195 59
10,759 39	214 89	213 83	428 72	595 56	5.356	1,148 12
28,063 59	1,041 21	911 30	1,952 51	994 35	2.072	414 40
11,942 21	152 34	641 37	793 71	1,083 58	4.133	206 65
88,157 96	530 53	1,005 32	1,535 85	5,554 65	1.396	1,072 02
67,728 53	168 80	149 13	317 93	491 11	12.864	2,044 92
21,926 87	335 03	546 59	881 62	386 04	3.311	165 55
19,297 58	167 75	200 43	368 18	657 18	5.968	1,098 64
63,219 90	168 66	180 36	349 02	390 79	7.821	391 05
41,378 95	191 49	826 32	1,017 81	746 00	4.542	2,311 45
25,152 68	85 12	601 10	686 22	313 07	3.967	198 35
48,291 16	111 93	144 61	256 54	710 37	3.790	486 14
66,110 81	618 96	1,252 41	1,871 37	904 12	1.775	177 50
66,108 87	166 70	806 10	972 80	741 33	4.300	860 00
28,245 37	431 60	821 71	1,253 31	476 43	3.799	379 90
72,285 54	523 01	845 86	1,368 87	1,658 76	3.232	2,212 09
59,798 12	404 15	1,091 71	1,495 86	970 02	11.922	596 10
53,978 91	221 00	481 44	702 44	504 32	10.376	1,037 60
51,168 82	303 99	306 17	610 16	473 77	7.166	1,433 20
60,737 89	791 04	1,229 58	2,020 62	664 09	7.188	5,224 97
30,059 13	702 81	286 75	989 56	1,199 58	.959	474 50
39,303 88	183 24	828 72	1,011 96	482 20	6.670	333 50
54,026 06	98 40	580 62	679 02	599 30	6.616	661 60
84,503 82	526 49	641 18	1,167 67	1,343 16	3.954	2,308 48
30,747 03	152 47	504 03	656 50	363 28	7.789	389 45
16,508 46	198 14	982 24	1,180 38	845 59	2.876	143 80
55,250 55	141 45	1,463 41	1,604 86	1,204 47	2.281	1,830 34
11,512 28	104 01	1,220 21	1,324 22	278 34	2.133	213 30
139,743 07	146 48	281 21	427 69	1,996 01	4.190	896 02
6,014 90	254 77	971 33	1,226 10	903 13	3.074	153 70
466 23	-	326 03	326 03	977 42	1.430	71 50
24,668 71	250 92	661 47	912 39	453 97	2.871	574 20
722 97	37 35	52 71	90 06	327 13	2.931	131 99
114,913 38	625 40	883 36	1,508 76	1,378 10	4.642	3,501 83
10,953 61	385 79	622 70	1,008 49	395 40	2.355	1,187 50
109,158 13	134 15	455 32	589 47	832 29	12.168	2,433 60
68,068 06	226 02	183 16	409 18	437 79	7.498	749 80
57,784 56	186 17	347 59	533 76	829 34	6.096	1,219 20
19,671 87	185 41	690 01	875 42	570 39	2.125	425 00
15,423 30	442 77	435 88	878 65	531 51	2.181	436 20
18,651 07	252 19	528 10	780 29	383 30	5.703	1,140 60
28,827 64	528 69	730 86	1,259 55	772 40	3.186	637 20
65,817 51	95 86	158 62	254 48	594 16	8.917	1,134 59
28,054 98	53 37	1,357 78	1,411 15	3,989 61	3.766	753 20
16,486 08	392 55	614 69	1,007 24	687 20	1.799	179 90

TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Totals to 1920.	During 1920.	Total.	Totals to 1920.	During 1920.	Total.
Eastham	\$10,561 22	\$1,312 10	\$11,873 32	\$18,837 67	\$112,317 17	\$131,154 84
Easthampton	8,205 81	271 07	8,476 88	26,555 67	827 65	27,383 32
Easton	4,971 90	184 11	5,156 01	22,221 55	110 48	22,332 03
Edgartown	6,498 76	922 10	7,420 86	1,915 99	1,543 46	3,459 45
Egremont	1,221 57	1,383 66	2,605 23	10,153 73	1,075 20	11,228 93
Erving	17,484 36	1,186 32	18,670 68	52,599 21	4,041 49	56,640 70
Essex	6,224 85	581 53	6,806 38	5,161 43	686 41	5,847 84
Fairhaven	2,868 50	489 55	3,358 05	21,506 45	676 21	22,182 66
Fall River	66 30	-	66 30	50 81	128 77	179 58
Falmouth	37,928 06	3,709 63	41,637 69	85,193 32	3,390 70	88,584 02
Fitchburg	15,821 83	464 92	16,286 75	85,695 74	807 93	86,503 67
Florida	17,362 15	7,223 95	24,586 10	34,484 76	15,084 53	49,569 29
Foxborough	7,434 47	760 57	8,195 04	24,863 59	1,357 54	26,221 13
Frammingham	13,563 26	2,583 20	16,146 46	12,025 09	1,771 18	13,796 27
Franklin	8,900 89	1,360 46	10,261 35	9,633 34	954 80	10,588 14
Freetown	8,227 57	272 22	8,499 79	49,385 77	779 06	50,164 83
Gardner	10,132 47	726 31	10,858 78	43,310 86	2,322 82	45,633 68
Gay Head	3,420 04	723 75	4,143 79	2,768 50	4,143 91	6,912 41
Gill	71 50	-	71 50	1 12	108 29	109 41
Gloucester	53,218 81	2,898 23	56,117 04	41,490 39	1,671 99	43,162 38
Goshen	9,222 49	208 12	9,430 61	18,557 65	1,226 07	19,783 72
Grafton	17,948 88	3,285 28	21,234 16	20,173 36	3,883 00	24,056 36
Granby	14,115 84	1,274 39	15,390 23	11,495 73	3,952 22	15,447 95
Great Barrington	18,693 62	2,296 99	20,990 61	41,262 97	1,811 41	43,074 38
Greenfield	9,013 83	171 10	9,184 93	38,619 65	33,320 04	71,939 69
Groton	3,657 03	210 49	3,867 52	5,533 38	250 66	5,784 04
Groveland	6,232 27	1,954 77	8,187 04	7,219 95	2,098 53	9,318 48
Hadley	20,629 45	1,209 13	21,838 58	47,874 57	2,152 74	50,027 31
Hamilton	13,803 60	478 09	14,281 69	55,263 81	2,898 23	58,162 04
Hancock	48,866 36	179 54	49,045 90	107,023 32	66,301 02	173,324 34
Hanover	4,394 56	571 91	4,966 47	12,853 18	1,205 75	14,058 93
Hardwick	3,213 40	233 07	3,446 47	2,708 80	913 06	3,621 86
Harvard	5,242 95	828 90	6,071 85	6,950 46	1,353 95	8,304 41
Harwich	13,736 98	1,055 36	14,792 34	39,046 23	755 41	39,801 64
Hatfield	8,134 01	49 85	8,183 86	70,079 24	266 52	70,345 76
Haverhill	27,418 76	6,555 52	33,974 28	15,694 46	6,385 67	22,080 13
Hingham	9,897 66	727 21	10,624 87	47,564 05	2,930 39	50,494 44
Hinsdale	2,295 80	429 18	2,724 98	2,381 67	1,262 02	3,643 69
Holbrook	4,364 40	422 08	4,786 48	6,608 22	1,062 52	7,670 74
Holden	22,564 68	2,840 95	25,405 63	24,852 75	2,864 15	27,716 90
Holliston	7,638 75	846 83	8,485 58	8,290 53	1,586 21	9,876 74
Holyoke	9,017 15	683 10	9,700 25	44,745 16	1,201 26	45,946 42
Hopedale	55 48	236 42	291 90	378 71	203 51	582 22
Hudson	3,389 63	714 09	4,103 72	2,801 95	435 66	3,237 61
Huntington	15,479 70	1,503 70	16,983 40	13,980 82	3,325 64	17,306 46
Ipswich	19,000 99	3,330 98	22,331 97	74,271 58	1,679 58	75,951 16
Kingston	2,752 17	157 18	2,909 35	5,720 86	548 94	6,269 80
Lakeville	8,978 10	2,429 01	11,407 11	48,641 10	5,361 79	54,002 89
Lancaster	4,936 00	915 25	5,851 25	4,444 08	1,052 03	5,496 11
Lanesborough	5,400 27	365 74	5,766 01	4,780 77	1,177 81	5,958 58
Lawrence	6,312 53	762 76	7,075 29	21,081 10	1,111 85	22,192 95
Lee	36,427 30	2,800 98	39,228 28	29,618 32	3,508 50	33,126 82
Leicester	45,836 09	2,378 81	48,214 90	68,639 65	38,817 24	107,456 89
Lenox	55,417 03	1,688 63	57,105 66	53,270 93	4,263 51	57,534 44
Leominster	8,857 76	1,412 25	10,270 01	6,979 88	1,811 10	8,790 98
Lexington	24,774 57	1,158 58	25,933 15	112,858 41	1,543 66	114,402 07
Lincoln	11,820 27	168 14	11,988 41	68,317 58	865 60	69,183 18
Littleton	14,072 18	2,569 70	16,641 88	54,600 33	29,604 32	84,204 65
Lowell (east)				379 07		379 07
Lowell (south)	26,319 43	2,575 96	28,895 39	19,031 95	2,734 53	21,766 48
Lowell (north)				3,018 16		3,018 16
Lunenburg	21,289 26	1,402 62	22,691 88	54,166 56	86,578 10	140,744 66
Lynn	14,569 52	1,147 19	15,716 71	13,364 54	1,699 99	15,064 53
Malden	94 75	144 37	239 12	475 36	12 30	487 66
Mansfield	2,604 37	159 41	2,763 78	10,156 96	1,410 73	11,567 69
Marion	18,136 62	975 63	19,112 25	62,483 16	1,856 53	64,339 69
Marlborough	39,981 99	2,324 60	42,306 59	165,084 90	3,427 44	168,512 34
Marshfield	16,395 24	443 49	16,838 73	85,805 30	10,471 02	96,276 32
Mashpee	2,417 16	591 36	3,008 52	4,337 33	589 02	4,926 35
Mattapoisett	9,922 24	224 46	10,146 70	63,100 32	5,811 37	68,911 69
Medford	3,368 96	60 56	3,429 52	19,743 57	309 67	20,053 24
Melrose	1,857 67	1,155 33	3,013 00	2,065 55	354 04	2,419 59



# HIGHWAYS.

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Total expended.	AVERAGE EXPENDITURE PER MILE IN 1920.			Average Cost per Mile per Year.	Length under Mainte- nance (Miles).	Amount to be assessed on Cities and Towns under 1920 Ex- penditures.
	From Revenue Appropriation.	From Motor Vehicle Fees Fund.	Total.			
\$143,028 16	\$203 11	\$17,386 56	\$17,589 67	\$1,834 21	6.460	\$323 00
35,860 20	99 00	302 28	401 28	639 40	2.738	549 36
27,488 04	229 85	137 93	367 78	1,721 23	.801	147 30
10,880 31	375 14	627 93	1,003 07	194 97	2.458	245 80
13,834 16	253 32	196 85	450 17	1,037 58	5.462	273 10
75,311 38	146 04	497 54	643 58	792 23	8.123	812 30
12,654 22	399 13	471 11	870 24	902 06	1.457	145 70
25,540 71	131 35	181 44	312 79	588 15	3.727	582 88
245 88	-	4,024 06	4,024 06	1,287 33	.032	64 00
130,221 71	238 91	218 37	457 28	564 45	15.527	3,550 16
102,790 42	112 93	196 24	309 17	1,242 21	4.117	636 42
74,155 39	1,004 44	2,097 40	3,101 84	1,687 92	7.192	719 20
34,416 17	216 44	386 32	602 76	615 43	3.514	702 80
29,942 73	805 74	552 46	1,358 20	682 56	3.206	2,177 19
20,849 49	361 54	253 73	615 27	521 14	3.763	1,157 63
58,664 62	70 36	201 35	271 71	926 81	3.869	386 90
56,492 46	216 42	692 14	908 56	785 10	3.356	1,524 56
11,056 20	230 93	1,322 24	1,553 17	600 88	3.134	156 70
180 91	-	381 30	381 30	86 60	.284	14 20
99,279 42	429 62	247 85	677 47	1,104 56	6.746	2,285 11
29,214 33	84 67	498 81	583 48	540 54	2.458	122 90
45,290 52	343 00	405 41	748 41	586 36	9.578	1,915 60
30,838 18	165 81	514 21	680 02	386 35	7.686	384 30
64,064 99	263 96	208 16	472 12	746 35	8.702	2,054 20
81,124 62	31 38	6,112 65	6,144 03	1,070 77	5.451	4,979 07
9,651 56	138 94	165 45	304 39	375 36	1.515	230 57
17,505 52	1,134 52	1,217 95	2,352 47	578 48	1.723	172 30
71,865 89	257 70	458 81	716 51	783 22	4.692	938 40
72,443 73	154 17	934 61	1,088 78	1,638 77	3.101	620 20
222,370 24	55 52	20,501 24	20,556 76	3,067 20	3.234	161 70
19,025 40	100 39	211 65	312 04	579 33	5.697	888 83
7,068 33	284 58	1,114 85	1,399 43	414 30	.819	163 80
14,376 26	357 90	584 61	942 51	423 70	2.316	463 20
54,593 98	162 94	116 63	279 57	480 15	6.477	647 70
78,529 62	14 08	75 29	89 37	1,988 29	3.540	158 19
56,054 41	1,146 87	1,117 15	2,264 02	629 78	5.716	6,470 59
61,119 31	185 75	748 50	934 25	910 76	3.915	1,828 80
6,368 67	121 75	358 02	479 77	307 08	3.525	176 25
12,457 22	164 75	414 72	579 47	304 36	2.562	512 40
53,122 53	408 89	412 23	821 12	469 82	6.948	1,389 60
18,362 32	171 98	322 14	494 12	194 73	4.924	984 80
55,646 67	163 93	288 28	452 21	1,286 24	4.167	942 18
874 12	748 16	643 02	1,391 18	1,106 48	.316	219 97
7,341 33	625 30	381 49	1,006 79	469 00	1.142	574 88
34,289 86	187 70	415 13	602 83	616 75	8.011	400 55
98,283 13	753 27	379 82	1,133 09	1,997 95	4.422	2,505 28
9,179 15	61 88	216 11	277 99	353 28	2.540	254 00
65,410 00	290 59	641 44	932 03	613 37	8.359	835 90
11,347 36	732 78	842 30	1,575 08	499 77	1.249	249 80
11,724 59	111 51	359 09	470 60	560 18	3.280	164 00
29,268 24	942 84	1,374 36	2,317 20	3,220 18	.809	937 31
72,355 10	261 65	327 74	589 39	555 57	10.705	2,141 00
155,671 79	490 88	8,010 16	8,501 04	1,405 66	4.846	969 20
114,640 10	220 36	556 38	776 74	954 77	7.663	2,976 07
19,060 99	554 04	710 51	1,264 55	457 50	2.549	1,611 68
140,335 22	231 39	308 30	539 69	1,438 09	5.007	1,351 12
81,171 59	81 58	419 99	498 57	1,649 79	2.061	206 10
100,846 53	414 53	4,775 66	5,190 19	1,602 21	6.199	619 90
379 07						
50,661 87	970 60	1,030 34	2,000 94	973 11	2.654	2,655 25
3,018 16						
163,436 54	238 30	14,709 15	14,947 45	2,083 10	5.886	588 60
30,781 24	313 27	464 22	777 49	1,087 17	3.662	1,423 59
726 78	956 09	81 46	1,037 55	1,991 17	.151	78 34
14,331 47	131 42	1,163 01	1,294 43	719 43	1.213	785 07
83,451 94	147 58	280 82	428 40	693 28	6.611	1,322 20
210,818 93	332 85	490 76	823 61	1,824 10	6.984	2,876 02
113,115 05	53 57	1,264 77	1,318 34	900 38	8.279	1,655 80
7,934 87	75 70	75 40	151 10	166 30	7.812	390 60
79,058 39	70 01	1,812 65	1,882 66	1,168 88	3.206	320 60
23,482 76	70 26	359 24	429 50	2,197 93	.862	185 11
5,432 59	2,037 61	624 40	2,662 01	900 18	.567	754 68



TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Totals to 1920.	During 1920.	Total.	Totals to 1920.	During 1920.	Total.
Mendon . . . . .	\$202 43	\$316 58	\$519 01	\$2,596 44	\$482 42	\$3,078 86
Merrimac . . . . .	7,752 91	2,445 82	10,198 73	5,980 69	2,432 69	8,413 38
Methuen . . . . .	12,342 44	2,825 60	15,168 04	78,008 42	5,638 26	83,646 68
Middleborough . . . . .	27,692 42	952 86	28,645 28	105,923 74	13,803 06	119,726 80
Middleton . . . . .	15,897 80	48 37	15,946 17	3,047 40	252 30	3,299 70
Milford . . . . .	6,531 62	715 30	7,246 92	10,159 75	1,216 00	11,375 75
Millbury . . . . .	19,290 06	1,092 24	20,382 30	52,848 59	1,608 86	54,457 45
Millville . . . . .	2,382 94	1,598 96	3,981 90	3,647 72	1,301 62	4,949 34
Milton . . . . .	8,047 27	269 98	8,317 25	14,270 93	576 58	14,847 51
Monson . . . . .	5,028 67	149 10	5,177 77	2,067 72	508 58	2,576 30
Montague . . . . .	12,883 23	872 81	13,756 04	44,282 29	3,082 03	47,364 32
Nantucket . . . . .	20,755 30	4,130 91	24,886 21	13,200 89	829 22	14,030 11
Natick . . . . .	15,223 34	766 15	15,989 49	80,364 12	1,379 34	81,743 46
Needham . . . . .	6,349 03	743 39	7,092 42	5,545 07	1,247 66	6,792 73
New Braintree . . . . .	537 38	9 48	546 86	311 31	134 11	445 42
Newbury . . . . .	19,120 37	3,130 91	22,251 28	16,859 74	2,116 63	18,976 37
Newburyport . . . . .	12,715 50	1,541 60	14,257 10	9,843 68	375 69	10,219 37
New Marlborough . . . . .	209 76	59 30	269 06	192 06	-	192 06
Newton . . . . .	3,990 07	284 50	4,274 57	18,080 77	351 30	18,432 07
Norfolk . . . . .	6,163 90	485 74	6,649 64	14,350 51	1,734 09	16,084 60
North Adams . . . . .	59,698 61	4,831 14	64,529 75	104,614 88	11,976 93	116,591 81
Northampton . . . . .	11,787 31	500 93	12,288 24	45,906 19	1,306 24	47,212 43
North Andover . . . . .	19,157 96	3,606 33	22,764 29	14,720 33	4,376 88	19,097 21
North Attleborough . . . . .	11,330 82	2,831 92	14,162 74	52,360 97	3,238 97	55,599 94
Northborough . . . . .	19,787 59	596 36	20,383 95	74,980 23	1,781 07	76,761 30
Northbridge . . . . .	1,073 19	168 90	1,242 09	2,253 86	753 09	3,006 95
North Brookfield . . . . .	4,204 23	128 19	4,332 42	4,307 44	793 70	5,101 14
Northfield . . . . .	6,728 63	1,661 83	8,390 46	19,644 23	6,214 22	25,858 45
North Reading . . . . .	20,682 51	1,060 44	21,742 95	66,266 15	1,502 14	67,768 29
Norton . . . . .	11,244 15	1,749 98	12,994 13	14,125 03	3,464 46	17,589 49
Norwood . . . . .	13,274 48	1,384 83	14,659 31	26,386 79	2,454 12	28,840 91
Oak Bluffs . . . . .	10,179 57	1,181 99	11,361 56	5,673 62	1,432 05	7,105 67
Oakham . . . . .	905 38	558 09	1,463 47	4,244 54	1,924 40	6,168 94
Orange . . . . .	20,418 81	1,119 74	21,538 55	62,785 64	1,693 63	64,479 27
Orleans . . . . .	9,692 04	1,053 75	10,745 79	16,633 25	1,333 11	17,966 36
Oxford . . . . .	7,560 29	1,140 05	8,700 34	8,113 66	2,124 68	10,238 34
Palmer . . . . .	45,962 31	3,435 60	49,397 91	139,891 99	6,764 02	146,656 01
Paxton . . . . .	26,523 36	323 39	26,846 75	21,888 90	4,071 69	25,960 59
Pembroke . . . . .	3,628 11	627 74	4,255 85	4,494 93	893 45	5,388 38
Pepperell . . . . .	3,718 68	925 18	4,643 86	8,199 62	1,849 50	10,049 12
Petersham . . . . .	248 40	1,402 64	1,651 04	3,265 81	3,483 65	6,749 46
Phillipston . . . . .	25,029 07	523 43	25,552 50	29,723 18	517 63	30,240 81
Pittsfield . . . . .	60,586 13	1,395 53	61,981 66	78,038 84	72,254 57	150,293 41
Plainville . . . . .	4,540 79	2,513 62	7,054 41	26,170 26	2,474 50	28,644 76
Plymouth . . . . .	20,299 89	600 41	20,900 30	79,761 02	1,113 17	80,874 19
Princeton . . . . .	4,592 61	9 69	4,602 30	6,737 52	1,126 66	7,864 18
Provincetown . . . . .	4,208 00	1,526 39	5,734 39	15,162 34	889 63	16,051 97
Quincy . . . . .	10,067 57	569 98	10,637 55	52,079 61	10,395 94	62,475 55
Randolph . . . . .	3,819 28	451 29	4,270 57	46,031 31	6,179 91	52,211 22
Raynham . . . . .	4,780 79	1,408 79	6,189 58	12,015 73	3,119 78	15,135 51
Reading . . . . .	40,362 36	992 51	41,354 87	54,466 38	2,265 40	56,731 78
Rehoboth . . . . .	15,546 08	1,677 76	17,223 84	59,972 46	3,495 16	63,467 62
Revere (east) . . . . .				1,166 67		1,166 67
Revere (west) . . . . .	17,155 85	2,030 91	19,186 76	36,317 12	1,950 72	38,267 84
Revere (north) . . . . .				3,526 10		3,526 10
Richmond . . . . .	8,790 37	783 50	9,573 87	26,588 44	5,326 01	31,914 45
Rochester . . . . .	10,749 25	945 56	11,694 81	30,325 36	2,160 43	32,485 79
Rockland . . . . .	7,453 97	1,007 93	8,461 90	13,448 87	1,430 69	14,879 56
Rockport . . . . .	9,370 76	1,365 55	10,736 31	4,116 92	543 06	4,659 98
Rowley . . . . .	12,634 78	1,569 99	14,204 77	98,832 12	1,589 12	100,421 24
Russell . . . . .	38,897 63	2,320 38	41,218 01	45,870 18	6,777 47	52,647 65
Rutland . . . . .	4,019 66	1,953 76	5,973 42	9,710 61	3,366 62	13,077 23
Salem . . . . .	19,907 32	607 83	20,515 15	12,189 87	809 97	12,999 84
Salisbury . . . . .	11,174 30	1,720 71	12,895 01	54,509 42	2,655 05	57,164 47
Sandwich . . . . .	12,539 77	1,749 10	14,288 87	28,523 17	3,414 11	31,937 28
Saugus . . . . .	17,433 65	2,023 62	19,457 27	70,226 45	1,037 55	71,264 00
Savoy . . . . .	4,123 88	511 38	4,635 26	7,264 09	2,583 19	9,847 28
Scituate . . . . .	13,664 49	564 87	14,229 36	47,640 11	1,305 21	48,945 32
Seekonk . . . . .	11,939 27	1,563 78	13,503 05	54,917 26	35,959 91	90,877 17
Sharon . . . . .	1,051 56	-	1,051 56	1,128 20	622 29	1,750 49
Sheffield . . . . .	7,370 13	1,592 85	8,962 98	13,321 93	2,120 12	15,442 05
Shelburne . . . . .	13,627 54	1,453 11	15,080 65	22,796 18	7,474 58	30,270 76

Total expended.	AVERAGE EXPENDITURE PER MILE IN 1920.			Average Cost per Mile per Year.	Length under Maintenance (Miles).	Amount to be assessed on Cities and Towns under 1920 Expenditures.
	From Revenue Appropriation.	From Motor Vehicle Fees Fund.	Total.			
\$3,597 87	\$341 14	\$519 85	\$860 99	\$553 86	.928	\$46 40
18,612 11	1,096 77	1,090 89	2,187 66	422 90	2.230	223 00
113,318 72	362 44	723 22	1,085 66	1,282 62	7.796	4,231 93
148,372 08	76 57	1,109 12	1,185 69	682 44	12.445	5,404 69
4,741 87	18 22	95 03	113 25	286 17	2.655	150 33
18,622 67	201 66	342 82	544 48	419 40	3.547	965 65
74,839 75	366 27	539 52	905 79	1,496 79	2.982	596 40
8,931 24	964 98	785 53	1,750 51	407 50	1.657	165 70
23,164 76	255 43	545 48	800 91	1,303 73	1.057	423 28
7,754 07	92 32	314 91	407 23	234 79	1.615	323 00
61,120 36	152 32	537 87	690 19	706 43	5.730	1,977 42
38,916 32	638 96	128 26	767 22	269 49	6.465	2,480 06
97,732 95	239 12	430 51	669 00	1,771 58	3.204	1,072 74
13,885 15	365 48	613 40	978 88	422 04	2.034	995 52
992 28	23 88	337 81	361 69	130 94	.397	19 85
41,227 65	739 99	500 26	1,240 25	550 80	4.231	846 20
24,476 47	694 41	169 23	863 64	609 74	2.220	958 64
461 12	257 82	-	257 82	1,002 43	.230	23 00
22,706 64	275 68	340 49	616 17	1,109 69	1.032	317 90
22,734 24	335 92	1,199 23	1,535 15	527 22	1.446	144 60
181,121 56	593 80	1,472 07	2,065 87	1,652 34	8.136	8,404 03
59,500 67	71 53	186 58	258 11	891 14	7.001	903 58
41,861 50	340 05	412 72	752 77	423 73	10.605	3,991 60
69,762 68	787 30	900 46	1,687 76	814 56	3.597	3,035 44
97,145 25	111 20	332 10	443 30	1,162 05	5.363	1,072 60
4,249 04	37 54	167 39	204 93	279 80	4.499	461 00
9,433 56	56 92	352 44	409 36	314 49	2.252	450 40
34,248 91	344 21	1,287 12	1,631 33	951 46	4.828	482 80
89,511 24	417 83	591 86	1,009 69	1,869 45	2.538	253 80
30,583 62	229 63	454 60	684 23	573 53	7.621	762 10
43,500 22	652 30	1,155 97	1,808 27	913 23	2.123	1,919 47
18,467 23	495 18	599 94	1,095 12	316 35	2.387	477 40
7,632 41	199 89	689 26	889 15	683 54	2.792	139 60
86,017 82	233 47	353 13	586 60	882 68	4.796	959 20
28,712 15	224 25	283 70	507 95	372 05	4.699	939 80
18,938 68	254 87	475 00	729 87	481 66	4.473	894 60
196,053 92	239 16	470 87	710 03	1,254 64	14.365	5,099 81
52,807 34	89 93	113 23	203 16	620 87	3.596	179 80
9,644 23	144 51	205 67	350 18	383 83	4.344	434 40
14,692 98	258 72	517 20	775 92	537 02	3.576	715 20
8,400 50	171 35	425 56	596 91	696 26	8.186	818 60
55,793 31	187 95	185 86	373 81	1,227 11	2.785	139 25
212,275 07	154 15	7,981 28	8,135 43	1,675 35	9.053	5,469 77
35,699 17	1,096 21	1,079 15	2,175 36	1,069 15	2.293	229 30
101,774 49	41 98	77 83	119 81	544 36	14.302	856 79
12,466 48	4 34	505 23	509 57	298 09	2.230	223 00
21,786 36	420 49	245 08	665 57	808 69	3.630	726 00
73,113 10	213 08	3,886 33	4,099 41	1,695 14	2.675	5,350 00
56,481 79	121 64	1,665 74	1,787 38	1,467 82	3.710	742 00
21,325 09	249 21	551 88	801 09	421 82	5.653	565 30
98,086 65	253 00	577 47	830 47	1,457 80	3.923	1,628 96
80,691 46	256 34	534 02	790 36	764 15	6.545	654 50
1,166 67						
57,454 60	404 48	388 51	792 99	2,462 55	5.021	1,990 82
3,526 10						
41,488 32	195 05	1,325 87	1,520 92	581 22	4.017	200 85
44,180 60	153 22	350 09	503 31	448 75	6.171	617 10
23,341 46	428 17	607 77	1,035 94	630 34	2.354	1,219 31
15,396 29	853 47	339 41	1,192 88	747 39	1.600	320 00
114,626 01	431 91	437 17	869 08	2,746 38	3.635	363 50
93,865 66	238 72	697 27	935 99	573 83	9.720	1,944 00
19,050 65	352 09	606 71	958 80	678 27	5.549	554 90
33,514 99	183 58	244 63	428 21	1,248 55	3.311	708 90
70,059 48	173 77	268 13	441 90	845 47	9.902	990 20
46,226 15	183 71	358 59	542 30	467 19	9.521	952 10
90,721 27	603 16	309 25	912 41	2,171 77	3.355	1,530 59
14,482 54	282 53	1,427 18	1,709 71	1,318 99	1.810	90 50
63,174 68	105 13	242 92	348 05	730 76	5.373	935 04
104,380 22	259 38	5,964 49	6,223 87	1,373 38	6.029	1,205 80
2,802 05	-	975 38	975 38	362 63	.638	127 60
24,405 03	138 48	184 33	322 81	505 87	11.502	1,150 20
45,351 41	220 77	1,135 61	1,356 38	798 03	6.582	1,316 40



## DEPARTMENT OF PUBLIC WORKS.

TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Totals to 1920.	During 1920.	Total.	Totals to 1920.	During 1920.	Total.
Shirley . . . . .	\$2,196 60	\$306 84	\$2,503 44	\$2,696 92	\$244 03	\$2,940 95
Shrewsbury . . . . .	50,022 97	1,552 28	51,575 25	97,507 34	9,424 42	106,931 76
Somerset . . . . .	21,960 26	4,087 38	26,047 64	120,082 94	4,661 89	124,744 83
Somerville . . . . .	7,411 64	280 10	7,691 74	43,734 36	325 76	44,060 12
Southampton . . . . .	1,312 65	204 05	1,516 70	1,155 39	527 68	1,683 07
Southborough . . . . .	9,110 06	945 66	10,055 72	9,006 46	1,619 31	10,625 77
Southbridge . . . . .	4,265 67	124 86	4,390 53	7,852 25	216 78	8,069 03
South Hadley . . . . .	53,084 69	2,253 99	55,338 68	51,007 38	4,010 80	55,018 18
Spencer . . . . .	23,624 78	442 75	24,067 53	21,786 34	883 76	22,670 10
Sterling . . . . .	15,189 29	2,521 96	17,711 25	12,083 30	2,726 42	14,809 72
Stockbridge . . . . .	12,594 61	1,853 09	14,447 70	26,838 07	1,358 51	28,196 58
Stoneham . . . . .	11,871 15	1,604 54	13,475 69	29,019 31	31,950 30	60,969 61
Stoughton . . . . .	9,352 78	1,479 17	10,831 95	38,878 88	9,261 68	48,140 56
Sturbridge . . . . .	6,684 01	471 97	7,155 98	10,310 12	1,234 78	11,544 90
Sudbury . . . . .	35,619 09	295 19	35,914 28	156,066 98	1,907 75	157,974 73
Sunderland . . . . .	5,402 88	228 42	5,631 30	24,913 93	778 96	25,692 89
Sutton . . . . .	8,861 58	1,130 45	9,992 03	13,740 20	3,302 82	17,043 02
Swampscott . . . . .	22,810 68	454 86	23,265 54	21,183 64	532 00	21,715 64
Swansea . . . . .	15,582 55	7,815 23	23,397 78	62,686 68	13,705 96	76,392 64
Taunton . . . . .	19,497 80	1,554 89	21,052 69	67,488 90	3,144 86	70,633 76
Templeton . . . . .	14,793 69	1,331 96	16,125 65	42,862 67	5,567 62	48,430 29
Tewksbury . . . . .	18,317 73	172 61	18,490 34	155,147 45	4,259 99	159,407 44
Tisbury . . . . .	5,975 48	13 80	5,989 28	23,669 19	279 73	23,948 92
Townsend . . . . .	12,209 71	1,740 53	13,950 24	27,032 89	5,231 48	32,264 37
Truro . . . . .	11,410 04	2,182 54	13,592 58	12,710 72	36,337 79	49,048 51
Tyngsborough . . . . .	20,690 11	4,427 80	25,117 91	26,134 71	3,465 53	29,600 24
Upton . . . . .	590 25	1,380 51	1,970 76	407 18	1,639 84	2,047 02
Uxbridge . . . . .	9,008 19	2,765 77	11,773 96	13,644 16	2,429 53	16,073 69
Wales . . . . .	2,175 98	133 66	2,309 64	720 67	1,594 63	2,315 30
Walpole . . . . .	20,198 87	1,933 71	22,132 58	57,040 41	5,029 11	62,069 52
Ware . . . . .	12,223 35	1,062 01	13,285 36	8,709 39	3,998 04	12,707 43
Wareham . . . . .	24,488 49	2,008 61	26,497 10	88,832 19	5,636 64	94,468 83
Warren . . . . .	22,125 99	395 10	22,521 09	119,005 09	763 63	119,768 72
Washington . . . . .	-	-	-	-	159 25	159 25
Watertown . . . . .	8,348 96	698 41	9,047 37	11,642 92	542 79	12,185 71
Wayland . . . . .	42,586 33	355 52	42,941 85	38,988 81	1,962 69	40,951 50
Webster . . . . .	4,407 98	817 71	5,225 69	12,621 67	807 18	13,428 85
Wellesley . . . . .	5,857 18	353 47	6,210 65	18,337 97	117 98	18,455 95
Wellfleet . . . . .	11,640 61	1,886 19	13,526 80	10,615 77	58,959 16	69,574 93
Wenham . . . . .	13,349 88	695 12	14,045 00	20,217 18	34,452 57	54,669 75
Westborough . . . . .	6,667 43	869 27	7,536 70	6,808 25	2,433 65	9,241 90
West Boylston . . . . .	10,711 94	512 44	11,224 38	43,229 91	765 29	43,995 20
West Bridgewater . . . . .	22,278 34	460 01	22,738 35	8,715 85	2,144 24	10,860 09
West Brookfield . . . . .	18,113 24	672 36	18,785 60	44,918 64	1,603 50	46,522 14
Westfield . . . . .	35,918 71	2,365 03	38,283 74	45,888 89	3,186 67	49,075 56
Westford . . . . .	13,698 53	2,164 85	15,863 38	12,971 08	6,399 54	19,370 62
Westminster . . . . .	29,735 16	2,555 34	32,290 50	76,097 16	5,765 14	81,862 30
West Newbury . . . . .	23,019 56	1,963 47	24,983 03	16,366 97	4,987 99	21,354 96
Weston . . . . .	24,876 62	736 40	25,613 02	42,141 46	1,148 22	43,289 68
Westport . . . . .	37,604 25	2,088 85	39,693 10	55,128 63	6,041 80	61,170 43
West Springfield . . . . .	11,510 28	74 90	11,585 18	50,354 26	694 33	51,048 59
West Tisbury . . . . .	5,755 47	633 78	6,389 25	19,030 35	1,223 61	20,253 96
Westwood . . . . .	12,888 39	92 20	12,980 59	14,576 75	268 23	14,844 98
Weymouth . . . . .	32,413 77	2,455 09	34,868 86	89,359 64	11,652 73	101,012 37
Whately . . . . .	15,841 61	446 27	16,287 88	47,590 14	933 38	48,523 52
Whitman . . . . .	6,549 34	499 15	7,048 49	17,453 27	2,289 23	19,742 50
Wilbraham . . . . .	26,769 11	730 04	27,499 15	99,450 99	1,458 67	100,909 66
Williamsburg . . . . .	8,634 98	832 16	9,467 14	32,464 74	2,741 66	35,206 40
Williamstown . . . . .	14,711 21	288 49	14,999 70	43,862 06	514 92	44,376 98
Wilmington . . . . .	5,391 96	749 14	6,141 10	20,521 09	55,008 61	75,529 10
Winchendon . . . . .	12,574 96	3,474 63	16,049 59	29,376 65	11,466 45	40,843 10
Winchester . . . . .	11,425 88	1,470 74	12,896 62	15,099 56	1,769 02	16,868 58
Windsor . . . . .	2,560 73	150 00	2,710 73	4,909 56	1,098 90	6,008 46
Woburn . . . . .	11,965 37	2,889 58	14,854 95	11,511 02	1,901 20	13,412 22
Worcester . . . . .	32,887 65	1,281 07	34,168 72	73,893 13	1,934 54	75,827 67
Wrentham . . . . .	17,723 24	2,121 58	19,844 82	63,587 08	5,734 24	69,321 32
Yarmouth, North } . . . . .	22,393 67	1,875 38	24,269 05	51,159 33	5,642 37	56,801 70
Yarmouth, South }						
Totals . . . . .	\$3,850,201 74	\$358,889 44	\$4,209,091 18	\$9,257,793 46	\$1,619,694 17	\$10,877,487 63



Total expended.	AVERAGE EXPENDITURE PER MILE IN 1920.			Average Cost per Mile per Year.	Length under Maintenance (Miles).	Amount to be assessed on Cities and Towns under 1920 Expenditures.
	From Revenue Appropriation.	From Motor Vehicle Fees Fund.	Total.			
\$5,444 39	\$84 81	\$67 45	\$152 26	\$275 24	3.618	\$275 44
158,507 01	319 60	1,940 38	2,259 98	1,538 93	4.857	971 40
150,792 47	412 12	470 04	882 16	961 03	9.918	1,983 60
51,751 86	176 94	205 79	382 73	3,206 83	1.583	302 93
3,199 77	288 21	745 38	1,033 59	305 37	.708	35 40
20,681 49	256 20	438 72	694 92	428 66	3.691	738 20
12,459 56	92 01	159 75	251 76	549 48	1.357	170 82
110,356 86	305 79	544 13	849 92	918 09	7.371	3,132 40
46,737 63	144 69	288 81	433 50	947 08	3.060	612 00
32,520 97	309 10	334 16	643 26	369 04	8.159	815 90
42,644 28	435 71	319 42	755 13	972 39	4.253	850 60
74,445 30	1,014 24	20,196 14	21,210 38	2,283 03	1.582	3,164 00
58,972 51	265 99	1,665 47	1,931 46	903 50	5.561	5,370 42
18,700 88	200 58	524 77	725 35	516 38	2.353	235 30
193,889 01	57 72	373 04	430 76	1,967 22	5.114	511 40
31,324 19	57 52	196 16	253 68	766 07	3.971	198 55
27,035 05	163 88	478 81	642 69	593 91	6.898	689 80
44,981 18	305 07	356 81	661 88	1,419 36	1.491	493 43
99,790 42	826 13	1,448 83	2,274 96	1,081 81	9.460	1,892 00
91,686 45	169 93	343 70	513 63	796 54	9.150	2,349 87
64,555 94	234 17	978 84	1,213 01	780 01	5.688	1,137 60
177,897 78	27 90	688 65	716 55	1,695 13	6.186	1,237 20
29,938 20	7 16	145 24	152 40	612 45	1.926	146 76
46,214 61	288 45	867 00	1,155 45	425 95	6.034	603 40
62,641 09	216 20	3,599 58	3,815 78	800 01	10.095	504 75
54,718 15	638 01	499 36	1,137 37	503 22	6.940	347 00
4,017 78	395 22	469 46	864 68	775 03	3.493	349 30
27,847 65	574 41	504 58	1,078 99	444 92	4.815	2,597 65
4,624 94	26 21	312 67	338 88	226 86	5.100	255 00
84,202 10	366 58	953 38	1,319 96	778 76	5.275	3,481 41
25,992 79	254 31	957 39	1,211 70	390 10	4.176	2,530 02
120,965 93	151 75	425 86	577 61	915 87	13.236	3,822 62
142,289 81	79 98	154 58	234 56	1,741 57	4.940	579 36
159 25	-	75 58	75 58	283 36	2.107	79 63
21,233 08	821 62	638 58	1,460 20	1,633 64	.850	620 60
83,893 35	124 27	686 02	810 29	1,597 45	2.861	572 20
18,654 54	314 50	310 45	624 95	787 54	2.660	812 44
24,666 60	300 57	100 32	400 89	1,087 21	1.176	235 72
83,101 73	256 07	8,004 23	8,260 30	1,004 33	7.366	368 30
68,714 75	394 51	19,553 10	19,947 61	1,981 33	1.762	352 40
16,778 60	290 63	813 66	1,104 29	332 67	2.991	598 20
55,219 58	119 09	177 85	296 94	1,104 22	4.303	430 30
33,598 44	145 53	678 34	823 87	579 42	3.161	316 10
65,307 74	237 67	566 81	804 48	1,323 35	2.829	282 90
87,359 30	407 20	548 66	955 86	692 02	5.808	2,775 85
35,234 00	437 34	1,292 84	1,730 18	500 14	4.950	990 00
114,152 80	318 34	718 22	1,036 56	1,004 13	8.027	802 70
46,337 99	384 62	977 08	1,361 70	515 91	5.105	510 50
68,902 70	233 63	364 28	597 91	1,041 58	3.152	942 31
100,863 53	455 28	1,316 87	1,772 15	949 34	4.588	917 60
62,633 77	27 70	256 78	284 48	1,402 27	2.704	384 62
26,643 21	118 29	228 38	346 67	247 35	5.358	267 90
27,825 57	86 08	250 45	336 53	1,297 04	1.071	180 22
135,881 23	269 28	1,278 13	1,547 41	1,097 35	9.117	7,053 91
64,811 40	110 85	231 84	342 69	957 62	4.026	201 30
26,790 99	125 13	573 89	699 02	442 45	3.989	1,394 19
128,408 81	144 42	288 56	432 98	1,319 38	5.055	1,011 00
44,673 54	310 51	1,023 01	1,333 52	826 15	2.680	268 00
59,376 68	103 22	184 23	287 45	1,317 84	2.795	401 71
81,670 20	203 63	14,951 89	15,155 52	2,129 60	3.679	735 80
56,892 69	472 35	1,558 79	2,031 14	1,719 38	7.356	1,471 20
29,765 20	753 45	906 26	1,659 71	740 87	1.952	1,619 88
8,719 19	30 64	224 45	255 09	185 09	4.896	244 80
28,267 17	526 72	346 55	873 27	523 69	5.486	2,395 39
109,996 39	314 60	475 08	789 68	1,354 11	4.072	1,607 81
89,166 14	222 96	602 53	825 49	681 99	9.517	951 70
81,070 75	213 16	641 32	854 48	386 74	8.798	1,759 60
\$15,086,578 81	-	-	-	-	1,306.837	\$312,204 69

SPECIAL HIGHWAY IMPROVEMENTS AUTHORIZED BY ACTS  
PASSED IN 1920.

*Paxton and Rutland.*

This act (chapter 519) authorized the Division to expend during 1920 the sum of \$10,000 in the construction of the main county highway, beginning at the present improved highway in Paxton, running through West Rutland and ending at the present State highway in West Rutland in the town of Rutland; \$3,500 of said sum to be paid by Worcester County and \$1,500 by the town of Rutland.

No work has been done during the year except to make survey.

*Clinton.*

This act (chapter 520) authorized the Division to expend during 1920 the sum of \$35,000, 50 per cent thereof to be paid by the town of Clinton and 50 per cent by the county of Worcester, in the construction and improvement of the Clinton-West Boylston road, so called, in Clinton.

No work has been done during the year, except to make survey.

Expenditure to Dec. 1, 1920, \$127.75.

*Holden.*

This act (chapter 521) authorized the Division to expend during 1920 the sum of \$40,000, 65 per cent of said sum to be paid by Worcester County and 35 per cent by the town of Holden, in the construction and improvement of a highway in the town of Holden, beginning at the end of the improved road leading from Holden Center to Quinnapoxett Village in said town and extending toward the town of Princeton.

No work has been done during the year, except to make survey.

Expenditure to Dec. 1, 1920, \$385.66.



*Templeton.*

This act (chapter 522) authorized the Division to expend during 1920 the sum of \$6,000, 50 per cent of said sum to be paid by the town of Templeton and 50 per cent by Worcester County, for the construction or improvement of a highway in Templeton known as Royalston Road, leading from the village of Baldwinsville to the dividing line between Templeton and Phillipston.

The work done in 1920 consisted in the construction of an 8-inch gravel road, 18 feet wide, beginning at a point 5,550 feet easterly from the Phillipston line and extending in an easterly direction 2,700 feet.

The total expenditure was \$5,905.48.

*Westborough.*

This act (chapter 536) authorized the Division to expend during 1920 the sum of \$14,000, 50 per cent of said sum to be paid by the town of Westborough and 50 per cent by Worcester County, for the improvement of the main highway in the town of Westborough from the corner of East Main and Lyman streets, continuing towards Westborough Center.

No work has been done during the year, except to make survey.

*Chester, Middlefield, Peru and Hinsdale.*

This act (chapter 566) authorized the Division to expend during 1920 the sum of \$60,000 for the construction and improvement of the highway leading from Chester Village in the town of Chester to Middlefield Center, and thence through a part of the town of Peru to the town of Hinsdale. Of the amount authorized to be expended by this act, \$10,000 shall be paid by Middlefield, and such sums by Chester, Peru and Hinsdale as may be agreed upon by said towns, respectively, and said Division. The amounts required of Middlefield, Chester, Peru and Hinsdale shall be paid on order of the Division, and said towns are authorized to receive gifts or contributions from individuals or corporations to be used toward providing the sums required of them under the provisions of this



act. It was also provided that the counties of Berkshire, Hampden and Hampshire shall each repay to the Commonwealth 25 per cent of the cost to the Commonwealth of that part of the road which is situated in said counties, respectively.

No work has been done during the year, except to make survey.

Expenditure to Dec. 1, 1920, \$318.94.

*Blandford, Otis, Monterey and Great Barrington.*

This act (chapter 571) authorized the Division to expend during 1920 not exceeding \$25,000 for the construction of a highway from the village of Blandford in the town of Blandford through the villages of East Otis, Otis, West Otis and Monterey to the town of Great Barrington, 50 per cent of said sum to be repaid by the counties of Berkshire and Hampden in proportion to the length of road improved under this act in each of said counties.

No work has been done during the year.

WORK DONE OR EXPENDITURES MADE DURING 1920  
UNDER SPECIAL AUTHORITY OF THE LEGISLATURE  
PREVIOUS TO 1920.

1915.

*Southwick.*

Chapter 221, General Acts, authorized the construction and completion of highways in the five western counties of the State.

March 4, 1920, contract made with the Lane Construction Corporation of Meriden, Conn., for the construction of 7,900 feet of road, consisting of bituminous macadam 18 feet wide, in Southwick. The proposal amounted to \$41,679.

To Dec. 1, 1920, 95 per cent of the work had been completed. Total expenditure to Dec. 1, 1920, \$44,008.84.

1916.

*Hingham.*

Chapter 213, General Acts, authorized and directed the Massachusetts Highway Commission to construct and maintain a State highway in Hingham from the easterly end of the State highway on Lincoln Street in Hingham to the boundary lines of Cohasset and Hull at West's Corner.

Apportionment of expense:  $37\frac{1}{2}$  per cent to the Commonwealth; 25 per cent to the county of Plymouth;  $37\frac{1}{2}$  per cent to the town of Hingham.

Expenditure during 1920, \$4,919.86.

Total expenditure to Dec. 1, 1920, \$88,605.70.

1918.

*Leominster.*

Chapter 236, General Acts, authorized the Massachusetts Highway Commission to expend during 1918 the sum of \$20,000 in the construction or improvement of Prospect Street in Leominster, beginning at the town line of Lunenburg and extending westerly towards North Leominster.

Apportionment of expense: \$10,000 to be paid by Leominster; \$5,000 to be paid by Worcester County; and \$5,000 to be paid by the Commonwealth.

Expenditure during 1920, \$4,695.

Total expenditure to Dec. 1, 1920, \$5,221.45.

### 1919.

#### *Leominster.*

Chapter 231, Special Acts, authorized the Massachusetts Highway Commission to expend during 1919 a further sum of \$24,000 in the construction or improvement of Prospect Street in Leominster, beginning at the town line of Lunenburg and extending westerly toward North Leominster.

Apportionment of expense: \$12,000 to be paid by Leominster and \$6,000 to be paid by Worcester County.

Expenditure during 1920, \$5,778.55.

Total expenditure to Dec. 1, 1920, \$5,778.55.

#### *Holland and Brimfield.*

Chapter 232, Special Acts, authorized the Massachusetts Highway Commission to expend during 1919 the sum of \$10,000 in the construction or improvement of Holland Road in Holland and Brimfield, beginning at the intersection of Holland Road with the highway running from Brimfield to Sturbridge, easterly of Brimfield Center, and thence following the line of Holland Road to Holland Center. One-fourth of the expense of constructing said highway to be repaid by Hampden County to the Commonwealth.

Expenditure during 1920, \$5,392.35.

Total expenditure to Dec. 1, 1920, \$7,903.42.

#### *Holden.*

Chapter 233, Special Acts, authorized the Massachusetts Highway Commission to expend the sum of \$20,000 in the construction or improvement of a highway between Holden and the Wachusett Mountain State Reservation, beginning about eight-tenths of a mile south of Princeton Center and continuing toward the village of Quinnapoxett, provided Princeton appro-



priates \$10,000 to be used with the \$20,000 allowed by the Commonwealth; Worcester County to repay to the Commonwealth one-third of said \$20,000 in the manner provided by section 13 of Part 1 of chapter 344, General Acts of 1917. The towns of Princeton and Holden to assume and pay all land and grade damages.

Expenditure during 1920, \$25,852.57.

Total expenditure to Dec. 1, 1920, \$26,495.10.

#### *Middlefield.*

Chapter 240, Special Acts, authorized the Massachusetts Highway Commission to expend the sum of \$10,000 during 1919 in the reconstruction and improvement of the highway located in Middlefield and extending from the northerly line of Chester to the southerly line of Worthington through that portion of Middlefield known as Smith's Hollow and substantially parallel with the middle branch of the Westfield River.

Expenditure during 1920, \$7,113.73.

Total expenditure to Dec. 1, 1920, \$9,960.73.

#### *Westborough.*

Chapter 335, General Acts, authorized the Massachusetts Highway Commission to improve during 1919 the highway between Westborough and the village of North Grafton, which serves the Grafton State Hospital, and to expend the sum of \$12,000. Upon the completion of said improvement, one-third of the cost to be reimbursed to the Commonwealth by Worcester County, and one-third by Westborough and Grafton in proportion to the amount expended in said towns, as determined by the said commission.

Expenditure during 1920, \$4,000.

Total expenditure to Dec. 1, 1920, \$4,000.

#### *North Brookfield.*

Chapter 336, General Acts, authorized the Massachusetts Highway Commission to expend the sum of \$25,000 during 1919 in the construction and improvement of the highway from North Brookfield to New Braintree from the end of the mac-

adam highway in North Brookfield, at the junction of the Oakham road with the road leading from North Brookfield to New Braintree, to the point on the New Braintree road to which a macadam highway has been constructed on the North Brookfield side of the New Braintree and North Brookfield line.

Apportionment of expense: 50 per cent by the Commonwealth; 25 per cent by Worcester County; and 25 per cent by North Brookfield.

Expenditure during 1920, \$16,531.10.

Total expenditure to Dec. 1, 1920, \$17,958.30.

#### *Hubbardston and Rutland.*

Chapter 337, General Acts, authorized the Massachusetts Highway Commission to expend during 1919 the sum of \$50,000 in addition to the amount authorized for the same purpose by chapter 210, General Acts of 1916, in the further construction and improvement of the highway from Gardner to Worcester in the towns of Hubbardston and Rutland.

Apportionment of cost: 40 per cent to be paid by the Commonwealth; 40 per cent by Worcester County, and 20 per cent by Hubbardston for that part of the highway which is in Hubbardston, and 20 per cent by Rutland for that part of the highway which is in Rutland.

Sept. 14, 1920, contract made with Hinman & Rudiger of Sturbridge for the construction of 9,400 feet of gravel road 15 feet wide. The proposal amounted to \$27,530.60.

To Dec. 1, 1920, 60 per cent of the work had been completed.

Expenditure during 1920, \$27,954.64.

Total expenditure to Dec. 1, 1920, \$28,225.42.

#### *Holyoke.*

Chapter 338, General Acts, authorized the Massachusetts Highway Commission to construct a section of highway in Holyoke along and over the Easthampton road from Northampton Street in Holyoke to the Holyoke-Easthampton line in Holyoke, and to expend a sum not exceeding \$50,000, Holyoke to reimburse the Commonwealth for one-half, and Hampden County for one-quarter of the amount expended.



Sept. 14, 1920, contract made with Daniel O'Connell's Sons of Holyoke for the construction of 5,032 feet of highway consisting of bituminous macadam 18 feet wide. The proposal amounted to \$50,609.

To Dec. 1, 1920, 5 per cent of the work had been completed.  
Expenditure during 1920, \$1,488.28.

Total expenditure to Dec. 1, 1920, \$1,878.56.

*Milford-Southborough-Hopkinton.*

Chapter 339, General Acts, authorized the Massachusetts Highway Commission to expend the sum of \$10,000 during 1919 in the construction and improvement of the highway leading from the present highway in Milford, at a point near the Milford Pine Grove Cemetery, through Hopkinton, to the present highway in Southborough at the point where the highway from Hopkinton enters Southborough at Cordaville railroad bridge. Of the amount expended, \$5,000 to be paid by the Commonwealth, and, upon the completion of the work, \$2,500 to be paid by Worcester County into the treasury of the Commonwealth, and \$2,500 to be paid by Milford.

April 28, 1920, contract made with Cenedella & Co. of Milford for the construction of 1,900 feet of road, consisting of bituminous macadam 17 feet wide, in Milford.

Work completed Sept. 28, 1920.

Expenditure during 1920, \$7,354.25.

Total expenditure to Dec. 1, 1920, \$7,437.85.

*Dracut-Methuen.*

Chapter 340, General Acts, authorized the Massachusetts Highway Commission further to construct and improve a continuous section of highway from Lawrence to Lowell in the town of Dracut and city of Methuen, beginning at the junction of Broadway and Arlington Street, continuing by Broadway and Arlington Street in Dracut, and thence by Broadway and North Lowell Street in Methuen, and to expend not exceeding \$20,000, of which amount 25 per cent is to be repaid by the county within which the road is situated.

No expenditure made to Dec. 1, 1920.



*Norton.*

Chapter 348, General Acts, authorized the Massachusetts Highway Commission to construct as a State highway a part of the highway in Norton beginning at a point on Main Street near Woodward's Mill where the present State highway ends, and continuing through Main Street to the Easton town line, and to expend a sum not exceeding \$20,000. Upon the completion of said highway Bristol County shall, upon request of said commission, giving a statement of the total cost of said highway, pay into the treasury of the Commonwealth 35 per cent of the total cost.

Total expenditure to Dec. 1, 1920, \$119.23.

*Williamstown.*

Chapter 62, Resolves, provided for an investigation relative to the construction of a State highway in the town of Williamstown. The Division submitted a report on this matter under date of Jan. 7, 1920 (House No. 600 of 1920), its conclusion being that public necessity and convenience do not require the laying out and construction of a State highway in this town as set forth in the resolve.

Expenditure during 1920, \$82.70.

Total expenditure to Dec. 1, 1920, \$256.83.





Concrete road under construction in Taunton, 1920.



## FEDERAL AID IN CONSTRUCTING HIGHWAYS.

An act to provide that the "United States shall aid the States in the construction of rural post roads, and for other purposes," was passed by Congress, and approved July 11, 1916, the Federal government appropriating and making available during the five following years the total amount of \$75,000,000 for use in aiding the States in the construction of certain roads agreed upon between the Secretary of Agriculture and the highway departments of the various States.

This act provided that one-half of the cost of constructing any project agreed upon between the Secretary of Agriculture and the State highway department shall be provided for from the State or local funds, and that the amount that the Federal government shall pay on any mile of road shall not exceed \$10,000 a mile for its half, exclusive of the cost of bridges of more than 20 feet clear span.

By chapter 67, General Acts of 1917, Massachusetts accepted the provisions of the act of Congress aforesaid and authorized the Massachusetts Highway Commission to make contracts and agreements "and to do all other things necessary to co-operate with the United States government in the construction and maintenance of rural highways, under the provisions of the act of congress aforesaid, and to submit such plans, estimates, and programs for the improvement of highways as will meet the requirements of the secretary of agriculture under the provisions of the said act, and for this purpose it is hereby authorized to use any moneys which it may have available for the construction and maintenance of state highways, whether appropriated from the treasury of the commonwealth, or placed at the disposal of the commission by the provisions of section thirty of chapter five hundred and thirty-four of the acts of the year nineteen hundred and nine and the amendments thereof."

A general scheme, comprising several different routes which the State proposed to adopt in the expenditure of Federal aid,

was submitted in March, 1917, and was approved by the Federal authorities.

Chapter 18, General Acts of 1918, amended section 2 of chapter 67, General Acts of 1917, as follows: —

The Massachusetts highway commission is hereby authorized to make all contracts and agreements, and to do all other things necessary to co-operate with the United States government in the construction and maintenance of rural highways, under the provisions of the act of congress aforesaid, and to submit such plans, estimates, and programs for the improvement of highways as will meet the requirements of the secretary of agriculture under the provisions of the said act, and for this purpose it is hereby authorized to use any moneys which it may have available for the construction and maintenance of state highways. The said commission is also authorized to use any money heretofore or hereafter appropriated by the general court for the construction of specific highways or routes, the money appropriated from the fees obtained from the licensing of motor vehicles, or from towns under the provisions of section twenty-three of Part 1 of chapter three hundred and forty-four of the General Acts of nineteen hundred and seventeen, and also any money received from the federal government on account of the construction of highways. The said commission is also authorized for the purpose of securing federal aid to use any money appropriated by a county, city or town for the construction of a road or any part thereof for which federal aid may be secured, and to make any contracts or agreements involving the expenditure of said money, provided the county commissioners of the county or the selectmen or duly authorized officials of the city or town have agreed in writing to pay the money thus appropriated upon the order of said commission. Said commission is also authorized to maintain the roads constructed under the provisions of this act or of said act of congress, from any money appropriated by the general court for the maintenance of state highways or for the repair or maintenance of town or county ways.

Chapter 18 aforesaid also provided that “the treasurer and receiver general is hereby authorized to receive from the United States any and all sums of money payable to this commonwealth under any act of congress for the construction of any highways therein. The sums so received shall be expended upon the order or approval of the Massachusetts highway commission without specific appropriation.”

Special Acts of 1918, chapter 18, further authorized the Massachusetts Highway Commission “to expend during the



years nineteen hundred and eighteen, nineteen hundred and nineteen and nineteen hundred and twenty the unexpended balance of the five million dollars authorized for the construction of state highways by chapter seven hundred and four of the acts of nineteen hundred and twelve, and the unexpended balances of such appropriations or authorizations as have been heretofore made by the general court for the construction of specific highways or routes, in accordance with the several provisions of law originally authorizing said expenditures.”

Chapter 89, General Acts of 1919, further amended chapter 67, General Acts of 1917, as amended by chapter 18, General Acts of 1918, by adding a new section providing that “the Massachusetts highway commission is hereby authorized to make any agreements or contracts that may be required to secure federal aid in the construction of highways under the provisions of the act of congress aforesaid, and of all other acts in amendment thereof, or in addition thereto, and may, in such agreements or contracts, provide, among other things, for such labor preferences to honorably discharged soldiers, sailors and marines as are made necessary by federal legislation, and may provide that no other preference or discrimination among citizens of the United States shall be made in connection with the expenditure of any money received from the federal government by virtue of the said legislation.”

The act of Congress, approved July 11, 1916, was amended by an “Act making appropriations for the services of the Post Office Department for the fiscal year ending June 30, 1920, and for other purposes,” approved Feb. 28, 1919. Under the amended act additional amounts were appropriated as follows: the sum of \$50,000,000 for the fiscal year ending June 30, 1919; \$75,000,000 for the fiscal year ending June 30, 1920; \$75,000,000 for the fiscal year ending June 30, 1921.

The act of 1919 also provided that section 6 of said act of Congress, approved July 11, 1916, “be further amended so that the limitation of payments not to exceed \$10,000 per mile, exclusive of the cost of bridges of more than twenty feet clear span, which the Secretary of Agriculture may make, be, and the same is, increased to \$20,000 per mile.”



The following allotments have thus far been made to Massachusetts:—

For fiscal year ending June 30, 1917	. . . . .	\$73,850 95
For fiscal year ending June 30, 1918	. . . . .	147,701 90
For fiscal year ending June 30, 1919	. . . . .	958,145 15
For fiscal year ending June 30, 1920	. . . . .	1,400,078 27
For fiscal year ending June 30, 1921	. . . . .	1,472,788 83
		<hr/>
Total	. . . . .	\$4,052,565 10

The total amount received by Massachusetts from 1916 to Nov. 30, 1920, is \$481,210.69.

Projects to the number of 17 have been prepared in addition to those shown in the report of the Massachusetts Highway Commission for 1919. The total mileage included in the various Federal-aid road projects in this State, from the commencement of work of this character to Nov. 30, 1920, inclusive, is 170.231. The mileage in the various counties is:—

COUNTY.	Miles.
Barnstable . . . . .	30.605
Berkshire . . . . .	26.533
Bristol . . . . .	7.054
Essex . . . . .	19.470
Franklin . . . . .	15.984
Hampden . . . . .	6.563
Hampshire . . . . .	14.445
Middlesex . . . . .	20.211
Norfolk . . . . .	2.420
Plymouth . . . . .	7.088
Worcester . . . . .	19.858
Total . . . . .	<hr/> 170.231 <hr/>

STATEMENT OF FEDERAL-AID ROAD PROJECTS.<sup>1</sup>

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
1	Acushnet-Fairhaven . . . . .	2.182	\$21,820 00 <sup>2</sup>	\$21,820 00	Work completed.
2	Hanover . . . . .	2.708	19,480 36 <sup>2</sup>	19,480 36	Work completed.
3	Malden-Melrose-Saugus . . . . .	1.162	11,620 00 <sup>2</sup>	11,620 00	Work completed.
4	Danvers . . . . .	1.325	15,460 22 <sup>2</sup>	15,460 22	Work completed.
5	Windsor-Dalton . . . . .	3.240	59,216 30 <sup>2</sup>	32,764 45	Work under way.
6	Sandwich . . . . .	1.818	10,678 02 <sup>2</sup>	-	Work completed.
7	Cummington . . . . .	4.659	86,816 53 <sup>2</sup>	4,426 45	Work under way.
8	Athol-Petersham . . . . .	7.016	90,319 04 <sup>2</sup>	64,570 95	Work completed.
9	Saugus . . . . .	3.122	65,472 27 <sup>2</sup>	27,037 78	Work under way.
10	Braintree . . . . .	2.420	40,687 37 <sup>2</sup>	29,805 08	Work completed.
11	Concord-Acton-Littleton . . . . .	4.849	79,106 22 <sup>2</sup>	62,985 35	Work completed.
12	Ipswich . . . . .	2.173	21,851 50 <sup>2</sup>	-	Work completed.
13	Littleton-Groton . . . . .	6.450	130,504 25 <sup>2</sup>	8,392 11	Work under way.
14	Barnstable . . . . .	3.331	26,062 57 <sup>2</sup>	15,605 51	Work completed.
15	Norwell-Hingham . . . . .	4.380	61,169 35 <sup>2</sup>	12,942 44	Work under way.
17	Lynnfield-Peabody . . . . .	1.794	35,880 00 <sup>2</sup>	-	Work under way.
18	Lunenburg . . . . .	2.797	55,940 00 <sup>2</sup>	13,636 44	Work under way.
19	Taunton . . . . .	2.116	42,320 00 <sup>2</sup>	14,243 13	Work under way.
20	Tewksbury-Wilmington . . . . .	2.909	35,211 82 <sup>2</sup>	26,098 73	Work completed.
21	Pittsfield-Hancock . . . . .	3.637	72,740 00 <sup>2</sup>	32,011 69	Work under way.
22	Greenfield-Bernardston . . . . .	6.426	57,519 71 <sup>2</sup>	9,263 45	Work under way.
23	Great Barrington . . . . .	2.124	31,573 87 <sup>2</sup>	-	Work completed.
24	Seekonk . . . . .	2.756	19,527 75 <sup>2</sup>	13,666 84	Work completed.
25	Billerica . . . . .	.597	38,389 77 <sup>2</sup>	3,389 34	Work under way.
26	Greenfield-Shelburne (section 1)	5.134	102,680 00 <sup>2</sup>	24,527 28	Work under way.
	Greenfield-Shelburne (section 2)	4.424	88,480 00	-	Project approved.
27	Hamilton-Wenham . . . . .	1.766	22,756 08 <sup>2</sup>	-	Work completed.
28	Lanesborough:				
	Section A . . . . .	.990	19,780 00 <sup>2</sup>	3,274 86	Work completed.
	Section B . . . . .	2.680	53,800 00 <sup>2</sup>	-	- -
29	Ware . . . . .	2.626	46,557 55 <sup>2</sup>	7,688 99	Work under way.
30	Brimfield . . . . .	4.238	75,889 00 <sup>2</sup>	-	- -
31	Danvers-Peabody . . . . .	1.107	22,140 00 <sup>2</sup>	-	Work completed.
32	Huntington . . . . .	3.078	86,948 26 <sup>2</sup>	6,499 24	Work under way.

<sup>1</sup> All of these projects are now, or will be later, State highways. <sup>2</sup> Signed agreements.

STATEMENT OF FEDERAL-AID ROAD PROJECTS <sup>1</sup> — *Concluded.*

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
33	Acton-Littleton:				
	Section A . . . . .	2.182	\$43,640 00 <sup>2</sup>	-	Work under way.
	Section B . . . . .	1.624	32,480 00	-	- -
34	Dudley . . . . .	1.359	27,180 00 <sup>2</sup>	-	Work under way.
35	Haverhill-Methuen . . . .	4.544	90,880 00	-	Project approved.
36	Eastham-Wellfleet-Truro-Provincetown:				
	Section A . . . . .	10.690	91,347 85 <sup>2</sup>	-	Work under way.
	Section B . . . . .	6.719	75,936 70 <sup>2</sup>	-	- -
	Section C . . . . .	8.047	86,130 57 <sup>2</sup>	-	Work under way.
37	Egremont . . . . .	1.164	20,579 07 <sup>2</sup>	-	Work under way.
38	Peabody-Danvers . . . . .	2.827	56,540 00 <sup>2</sup>	-	Work under way.
39	Williamstown-New Ashford-Lanesborough.	7.923	147,195 00	-	Project approved.
40	East Brookfield . . . . .	1.011	20,220 00 <sup>2</sup>	-	Contract awarded.
41	Ashby . . . . .	1.250	11,517 00 <sup>2</sup>	-	- -
42	Washington . . . . .	2.291	45,820 00 <sup>2</sup>	-	- -
43	Leicester . . . . .	.638	12,760 00 <sup>2</sup>	-	Work under way.
44	Goshen-Cummington-Windsor	6.566	131,320 00	-	Project approved.
45	Palmer . . . . .	2.325	39,880 00	-	Contract awarded.
46	Upton-Hopedale . . . . .	4.261	85,220 00	-	Project approved.
47	Barre-Oakham . . . . .	1.738	34,760 00	-	Project approved.
48	Templeton . . . . .	1.038	14,850 00	-	Project forwarded.
	Totals . . . . .	170.231	\$2,716,654 00	\$481,210 69	

<sup>1</sup> All of these projects are now, or will be later, State highways.<sup>2</sup> Signed agreements.



## FEDERAL DISTRIBUTION OF ROAD EQUIPMENT, ETC.

The Division has received from the Secretary of Agriculture certain road equipment, etc., in accordance with an act of Congress approved Feb. 28, 1919, which provides, in section 7, "That the Secretary of War be, and he is hereby, authorized in his discretion to transfer to the Secretary of Agriculture all available war material, equipment, and supplies not needed for the purposes of the War Department, but suitable for use in the improvement of highways, and that the same be distributed among the highway departments of the several States to be used on roads constructed in whole or in part by Federal aid, such distribution to be made upon a value basis of distribution the same as provided by the Federal aid road act, approved July 11, 1916: Provided, That the Secretary of Agriculture, at his discretion, may reserve from such distribution not to exceed 10 per centum of such material, equipment, and supplies for use in the construction of national forest roads or other roads constructed under his direct supervision."

A schedule of what has been received during the fiscal year ending Nov. 30, 1920, follows: —

*Miscellaneous Equipment.*

Tanks, 165-gallon G. I. . . . .	18
Pump, Barnes plunger and 6 H. P. gas engine, complete . . . . .	1
Plow turn . . . . .	1
Double tree for plow . . . . .	1
Wheelbarrows . . . . .	17
Single trees . . . . .	2
Hoist, chain, 1 T. C. & M. Cyclone, black . . . . .	1
Tables, folding, 24" x 36" . . . . .	2
Pumps, hand D. A. piston force (Ward Company) . . . . .	28
Derrick, 5-ton, No. 36113 (14 pieces) . . . . .	1
Brooms, stable, with handles . . . . .	167
Shelters, trench (complete) . . . . .	5
Sheets, roofing metal . . . . .	1,162
Sets, chains, skid, Stanley, 40" x 6" . . . . .	13
Lanterns, railroad . . . . .	151
Chains, skid, Packard . . . . .	60
Bows, wood for tops, Nash Quad driver's seat . . . . .	78
Bodies, Ford delivery, with tops and fenders . . . . .	6
Brooms, stable . . . . .	50
Lanterns, folding, galvanized iron . . . . .	93

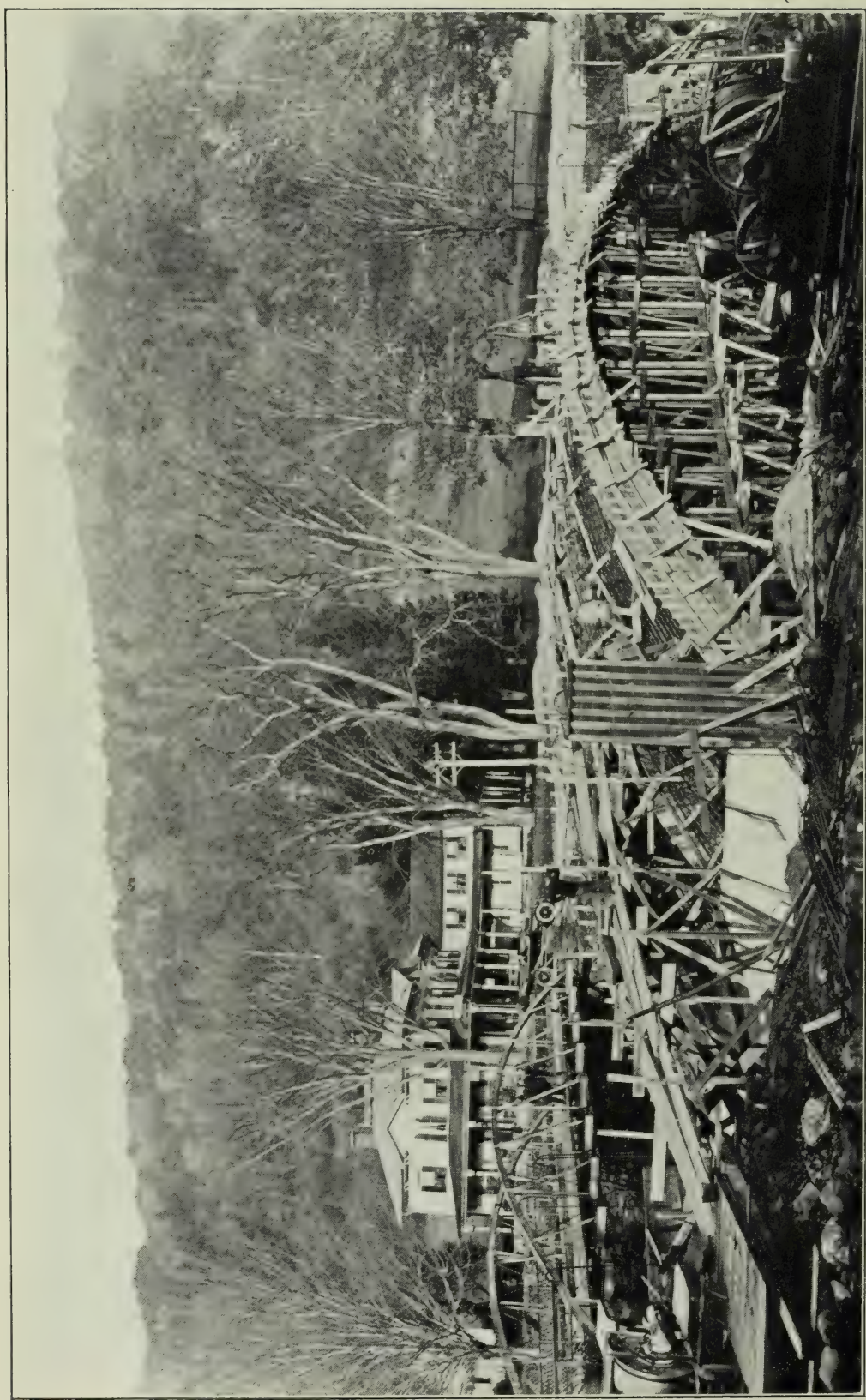
Shovels . . . . .	7
Picks . . . . .	9
Picks, no handles . . . . .	15
Handles, pick . . . . .	740
Heavy aviation spare parts (lot) . . . . .	1
Nash Quad spare parts (lot) . . . . .	2
Nash Quad springs, complete . . . . .	61
Nash Quad tops (lot) . . . . .	1
Nash Quad steel wheels, unfinished . . . . .	100
Packard clutch covers (lot) . . . . .	1
Packard transmission covers (lot) . . . . .	3
Selden, spare parts, steering spider (lot) . . . . .	1
Tires (lot) . . . . .	1
Shovels, entrenching E. D. . . . .	37
Corona typewriters . . . . .	7
Chains, Stanley (hook skid), 40" x 6" (sets) . . . . .	5
Forges, portable (complete) . . . . .	21
Wagons, sprinkling, 450 gallons, pump and hose . . . . .	3
Transit Engineer No. 8672, Young & Son . . . . .	1
Tapes, steel, 100', Lufkin . . . . .	5
Engine, hoisting steam, three drum, 7 x 10 . . . . .	1
Carts, push, concrete, $\frac{1}{3}$ yard . . . . .	4
Wagons, dump . . . . .	6
Drill, steam, complete, Sergeant . . . . .	1
Hoist, steam, double, drum, Lambert No. 306 . . . . .	1
Hoist, steam, three drum, No. 3413 . . . . .	1
Engine, gas, horizontal, 10 H. P. . . . .	1
Carts, water, two-wheel, 150 gallon capacity . . . . .	7
Derrick, hand hoist . . . . .	1
Pump power, complete with spare parts . . . . .	1

*Trucks and Passenger Cars received during the Year.*

Packard 3-ton trucks . . . . .	39
Federal 3-ton trucks . . . . .	13
Pierce Arrow 2-ton trucks . . . . .	31
Pierce Arrow 5-ton trucks . . . . .	18
Nash Quads, 2-ton trucks . . . . .	10
G. M. C. $\frac{3}{4}$ -ton trucks . . . . .	5
Ford ambulances . . . . .	18
Ford touring cars . . . . .	4
Oldsmobile touring cars . . . . .	2
<hr/>	
Total . . . . .	140
Received in 1919 . . . . .	82
<hr/>	
Total received, two years . . . . .	222







Cummington bridge, near "Dudley Manor", 1920.

## BRIDGES.

The following is a detailed list of bridges built or contracted for in 1920, and a list of bridges contemplated, for which designs and plans have been prepared: —

## BRIDGES BUILT OR CONTRACTED FOR.

TOWN.	Locality.	Character of Structure.
Bernardston . . .	Over Shattuck Brook . . .	34½-foot reinforced concrete beam and slab.
	Over Couch Brook . . .	32-foot reinforced concrete beam and slab.
Billerica . . .	Over Concord River . . .	3 spans reinforced concrete arch; 2 spans of 50 feet and 1 span of 65 feet.
Cummington . . .	Over branch of Westfield River.	100-foot reinforced concrete arch.
Huntington . . .	Norwich bridge, over north branch of Westfield River.	3 spans reinforced concrete arch; 2 spans of 55 feet and 1 span of 75 feet.
Oxford . . .	Over Mannexet River . . .	15½-foot reinforced concrete arch (extension).
Saugus . . .	Over Saugus River . . .	22-foot reinforced concrete beam and slab.
Ware . . .	Over Muddy River . . .	20½-foot span reinforced concrete beam and slab.
Warwick . . .	Over Orcutt Brook . . .	36-foot reinforced concrete arch.
Williamstown . . .	Over Roaring Brook . . .	13½-foot span reinforced beam and slab.
	Over Green River . . .	39-foot reinforced beam and slab.
Woburn . . .	Over Aberjona River . . .	18-foot reinforced beam and slab.
Worthington . . .	Over Little River . . .	20-foot reinforced beam and slab.

## CONTEMPLATED BRIDGES.

TOWN.	Locality.	Character of Structure.
Amherst . . .	Over Mill River . . .	60-foot reinforced concrete arch.
Barre . . .	Over Canal . . .	14-foot 8½-inch slab.
Becket . . .	Over west branch of Westfield River.	3 bridges, respectively, 25.4 feet, 27 feet and 26½ feet, reinforced beam and slab.
Bernardston . . .	Over Falls River . . .	60-foot reinforced concrete arch.
Brimfield . . .	Over Mill Brook . . .	17.9-foot reinforced concrete beam and slab.
Cummington . . .	Over Westfield River . . .	3 bridges; 80-foot reinforced concrete arch; 38-foot beam and slab, and 36-foot reinforced arch.
Dana . . .	Over branch of Ware River .	19-foot reinforced beam and slab.
Goshen . . .	Over Stones Brook . . .	30-foot reinforced concrete beam and slab.
	Over Swift River . . .	36-foot reinforced beam and slab.
Grafton . . .	Over Blackstone River . . .	70-foot reinforced concrete arch.
Holden . . .	Over Quinnapoxett River .	35-foot reinforced concrete beam and slab.



CONTEMPLATED BRIDGES — *Concluded.*

TOWN.	Locality.	Character of Structure.
Lanesborough . .	Over Town Brook . .	18-foot reinforced concrete beam and slab.
New Ashford . .	Over Thompsons Brook . .	10-foot 2½-inch reinforced slab.
	Over east branch of Green River.	24-foot beam and slab.
	Over Green River . .	28-foot beam and slab.
	Over Green River . .	16-foot beam and slab.
	Over Green River . .	16-foot beam and slab.
	Over Green River . .	16-foot beam and slab.
	Over Green River . .	23½-foot beam and slab.
Northbridge . .	Over Blackstone River . .	Reinforced concrete arch; 2 spans of 50 feet each.
Topsfield . . .	Over Ipswich River . .	32-foot stone arch, — repairs, new span-drel, walls and wings.
Westfield . . .	Frog Hole bridge, so called .	35-foot reinforced beam and slab.
Williamsburg . .	Over Meekins Brook . .	40-foot reinforced beam and slab.
	Over Mill River . . .	60-foot reinforced concrete arch.
	Over Mill River . . .	68-foot reinforced concrete arch (Hayden-ville).
Williamstown . .	Over Hemlock branch . .	34-foot beam and slab.

BRIDGE OVER THE MERRIMACK RIVER BETWEEN NEWBURYPORT AND SALISBURY.

The charge of this bridge was placed in the Massachusetts Highway Commission, and the same made a State highway by the provisions of chapter 716, Acts of 1912, which also provided that the expense of keeping the bridge in good repair for travel, of operating the draw and of maintaining the bridge shall be paid by the Commonwealth.

The expense for 1920 was \$7,957.60.

The total expense from 1912 to 1920, inclusive, was \$62,703.56.

BRIDGE OVER TAUNTON GREAT RIVER BETWEEN FALL RIVER AND SOMERSET.

The charge of this bridge was placed in the Massachusetts Highway Commission, and the same made a State highway by the provisions of chapter 717, Acts of 1912, which also provided that the expense of keeping the bridge in good repair for travel, and of operating the draw and maintaining the



bridge shall be paid by the Commonwealth; furthermore, that the expense incurred and to be incurred by the county of Bristol in restoring the bridge to a sound condition and in making it suitable for travel shall be borne by the Commonwealth.

The expense for 1920 was \$8,068.19.

The total expense from 1912 to 1920, inclusive, was \$138,709.23.

## MAINTENANCE AND IMPROVEMENT OF TOWN AND COUNTY WAYS.

Chapter 525, Acts of 1910, makes available for the maintenance and improvement of town and county ways a part of the fees received from the licensing of motor vehicles, and amends section 30 of chapter 534 of the Acts of 1909 as follows:—

The fees and fines received under the provisions of this act, together with all other fees received by the commission or any other person under the laws of the commonwealth relating to the use and operation of motor vehicles, shall be paid monthly by the secretary of the commission or by the person collecting the same into the treasury of the commonwealth, and shall be used by the commission for such expenses as may be authorized by the general court to carry out the provisions of law regulating the use of motor vehicles; and the balance shall be expended, under the direction of the commission, for the maintenance of state highways without specific appropriation by the general court, in addition to all sums already or hereafter appropriated by the general court for the same purpose, and an amount not exceeding twenty per cent of said balance may be expended in any one year by said commission in repairing, improving, constructing or maintaining town or county highways which are or may be used as through routes or which connect one city or town with another and where the selectmen of the town apply, by petition in writing, to have said improvement, construction or repair made, and said commission may spend any part of said money on said work, together with any money which any town may appropriate for said purpose to be used on the same highway, and said way shall remain a town or county way. . . .

By chapter 276, General Acts of 1917, section 30, aforesaid, was further amended so that if county commissioners, as well as the selectmen of towns, apply by petition to have improvement, construction or repairs made, the Commission may expend on the work any money which a county, as well as a town, may appropriate. This chapter also provides that the provisions of section 16 of chapter 47 of the Revised Laws shall not apply to any expenditure made under authority of said section 30 out of the said fees and fines, and that the counties shall not be required to repay to the Commonwealth any part of such expenditures.



Oiled gravel surface in Medway, 1920.





During the year the Division has contracted for work to be done in the towns named in the following table which also shows the type of road, the length contracted for, and the allotments or contributions by the State, towns and counties:—

## MAINTENANCE AND IMPROVEMENT OF TOWN AND COUNTY WAYS.

(Chapter 525, Acts of 1910.)

TOWN.	CONTRIBUTIONS.			Type of Road.	Length Contracted for (Feet).
	State.	Town.	County.		
Acton . . .	\$6,000 00	\$6,000 00	\$6,000 00	Bituminous macadam .	2,475
Andover . . .	18,000 00	18,000 00	18,000 00	Bituminous macadam .	7,550
Ashfield . . .	1,000 00	1,000 00	—	Gravel . . . . .	1,500
Ashland . . .	1,500 00	1,500 00	1,500 00	Water-bound macadam .	1,440
Ashland . . .	1,170 13	1,170 13	1,170 12	Bridge . . . . .	—
Ayer . . . .	12,250 00	17,250 00	12,500 00	Bituminous macadam .	5,000
Barre . . . .	2,000 00	3,000 00	—	Water-bound macadam .	2,600
Bedford . . .	500 00	500 00	500 00	Gravel . . . . .	700
Bellingham . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	1,500
Berkley . . .	1,000 00	1,000 00	1,000 00	Repairs and oiling . .	25,561
Bolton . . . .	2,000 00	1,000 00	2,000 00	Gravel . . . . .	2,350
Boxford . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	800
Bridgewater . .	3,000 00	3,000 00	—	Bituminous macadam .	2,275
Buckland . . .	1,000 00	1,000 00	—	Gravel . . . . .	650
Canton . . . .	20,000 00	20,000 00	20,000 00	Bituminous macadam .	5,300
Carver . . . .	4,000 00	4,000 00	4,000 00	Bituminous gravel . .	5,580
Chelmsford . .	12,000 00	12,000 00	12,000 00	Bituminous macadam .	6,300
Concord . . . .	3,000 00	13,000 00	3,000 00	Bituminous macadam .	3,400
Dana . . . . .	600 00	200 00	600 00	Bridge and gravel road .	50
Danvers . . . .	4,250 00	4,250 00	4,250 00	Bituminous macadam .	1,550
Dartmouth . . .	5,000 00	5,000 00	—	Bituminous macadam .	4,235
Dennis . . . .	3,000 00	3,000 00	—	Repairs and oiling . .	34,320
Dighton . . . .	3,000 00	3,000 00	—	Water-bound macadam .	2,200
Dracut . . . .	2,000 00	2,000 00	2,000 00	Bituminous macadam .	500
Dudley . . . .	29,055 00	8,500 00	12,500 00	Cement concrete . . .	7,174
Dunstable . . .	1,750 00	1,750 00	1,750 00	Repairs and oiling . .	29,000
Duxbury . . . .	10,000 00	30,000 00	—	Sand and asphalt . . .	14,520
Easthampton . .	2,000 00	2,000 00	—	Gravel . . . . .	3,500
East Bridgewater .	5,000 00	5,000 00	—	Bituminous gravel . .	2,317
East Longmeadow .	3,500 00	7,300 00	—	Gravel . . . . .	3,000
Essex . . . . .	8,000 00	8,000 00	8,000 00	Bituminous macadam .	2,095

MAINTENANCE AND IMPROVEMENT OF TOWN AND COUNTY WAYS —  
*Continued.*

TOWN.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
Framingham . . .	\$2,000 00	\$2,000 00	\$2,000 00	Gravel . . . . .	2,000
Framingham . . .	3,200 00	3,200 00	3,200 00	Bituminous macadam . .	1,618
Franklin . . . .	4,000 00	4,000 00	4,000 00	Gravel . . . . .	3,200
Freetown . . . .	3,000 00	3,000 00	—	Water-bound macadam . .	2,560
Freetown . . . .	2,500 00	2,500 00	2,500 00	Water-bound macadam . .	2,058
Georgetown . . .	2,500 00	2,500 00	2,500 00	Gravel . . . . .	3,400
Groveland . . . .	2,500 00	2,500 00	2,500 00	Gravel . . . . .	12,740
Hadley . . . . .	5,000 00	5,000 00	—	Water-bound macadam . .	2,750
Halifax . . . . .	3,600 00	4,800 00	3,600 00	Bituminous gravel . . .	4,281
Hanson . . . . .	2,250 00	2,250 00	—	Water-bound macadam . .	2,487
Harvard . . . . .	4,300 00	4,300 00	4,300 00	Gravel . . . . .	4,000
Hatfield . . . . .	5,000 00	5,000 00	—	Bituminous macadam . .	2,200
Holbrook . . . .	6,000 00	6,000 00	6,000 00	Bituminous gravel . . .	3,355
Holliston . . . .	2,500 00	2,500 00	2,500 00	Bituminous macadam . .	1,810
Hopkinton . . . .	3,000 00	3,000 00	3,000 00	Water-bound macadam . .	1,700
Hudson . . . . .	3,000 00	3,000 00	3,000 00	Gravel . . . . .	3,450
Ipswich . . . . .	400 00	400 00	400 00	Repairs . . . . .	8,950
Kingston . . . .	37,000 00	12,500 00	12,500 00	Bituminous macadam . .	8,454
Leicester . . . .	8,000 00	8,000 00	8,000 00	Bituminous macadam . .	4,613
Lexington . . . .	10,500 00	10,500 00	10,500 00	Bituminous macadam . .	3,793
Lincoln . . . . .	9,000 00	9,000 00	9,000 00	Bituminous macadam . .	3,550
Littleton . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	1,100
Littleton . . . .	1,000 00	1,000 00	1,000 00	Repairs . . . . .	20,000
Lynnfield . . . .	7,500 00	7,500 00	7,500 00	Bituminous macadam . .	2,800
Maynard . . . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	2,500
Medfield . . . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	1,800
Medway . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	2,500
Millbury . . . .	4,666 67	9,333 33	—	{ Cement concrete . . .	800
				{ Bituminous macadam . .	560
Millis . . . . .	2,000 00	3,000 00	2,000 00	Gravel . . . . .	3,500
Montague . . . .	500 00	500 00	—	Repairs and oiling . . .	5,730
Montague . . . .	5,000 00	5,000 00	—	Gravel . . . . .	4,000
Norfolk . . . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	5,700
North Brookfield .	5,000 00	5,000 00	5,000 00	Bituminous macadam . .	2,550
North Reading . .	900 00	900 00	900 00	Repairs and oiling . . .	40,878



MAINTENANCE AND IMPROVEMENT OF TOWN AND COUNTY WAYS —  
*Continued.*

TOWN.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
North Reading .	\$300 00	\$300 00	\$300 00	Water-bound macadam .	250
Norwood . . .	3,804 64	7,609 29	3,804 64	Bituminous macadam .	3,390
Oxford . . .	4,300 00	3,650 00	3,650 00	Bituminous macadam .	3,105
Paxton . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	3,225
Pembroke . . .	8,000 00	8,000 00	8,000 00	Bituminous gravel . .	7,050
Pepperell . . .	700 00	700 00	700 00	Gravel . . . . .	950
Petersham . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	2,700
Plympton . . .	8,000 00	8,000 00	8,000 00	Bituminous gravel . .	6,353
Plympton . . .	500 00	500 00	500 00	Gravel . . . . .	574
Princeton . . .	14,322 00	10,741 00	7,161 00	Bituminous macadam .	5,980
Randolph . . .	10,000 00	10,000 00	10,000 00	Cement concrete . .	2,000
Reading . . .	1,300 00	1,300 00	1,300 00	Bituminous macadam .	650
Rehoboth . . .	1,500 00	1,500 00	—	Gravel . . . . .	2,025
Richmond . . .	2,500 00	1,500 00	—	Gravel . . . . .	1,600
Rowley . . .	500 00	500 00	500 00	Gravel . . . . .	900
Salisbury . . .	18,000 00	18,000 00	18,000 00	Bituminous concrete .	10,450
Sandwich . . .	1,000 00	—	—	Repairs and oiling . .	14,500
Saugus . . .	5,000 00	5,000 00	5,000 00	{ Bituminous macadam .	1,600
				{ Repairs and oiling . .	10,400
Sharon . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam .	2,518
Sheffield . . .	1,000 00	1,000 00	—	Repairs and oiling . .	15,000
Sherborn . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	1,400
Shrewsbury . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	1,950
Sterling . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	2,100
Stoneham . . .	1,000 00	1,000 00	1,000 00	Bituminous macadam .	650
Stow . . .	1,500 00	1,500 00	1,500 00	Water-bound macadam .	1,000
Stow . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	2,500
Sudbury . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	2,100
Tisbury . . .	8,000 00	—	—	Sand and asphalt . .	119
Tyngsborough . .	500 00	500 00	500 00	Gravel . . . . .	900
Tyngsborough . .	300 00	200 00	300 00	Repairs . . . . .	7,400
Wakefield . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam .	1,450
Wareham-Bourne .	20,000 00	—	190,000 00	Bridge over Cohasset Nar- rows.	—
Wareham-Bourne .	40,000 00	—	—	Bituminous macadam ap- proaches to bridge.	1,693
Washington . . .	1,000 00	—	—	Water-bound macadam .	2,300

MAINTENANCE AND IMPROVEMENT OF TOWN AND COUNTY WAYS —  
*Concluded.*

TOWN.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
Wayland . . .	\$2,500 00	\$2,500 00	\$2,500 00	Bituminous macadam .	584
Wayland . . .	2,550 00	5,405 00	2,550 00	Repairs and oiling . .	50,688
West Bridgewater .	3,000 00	3,000 00	—	Bituminous gravel . .	1,600
Westfield . . .	50,000 00	50,000 00	50,000 00	Bituminous macadam .	26,055
Westport . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam .	4,700
West Springfield .	10,000 00	20,000 00	—	Cement concrete . . .	2,500
Westwood . . .	4,000 00	8,000 00	4,000 00	Bituminous macadam .	3,050
Weymouth . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	2,790
Wilbraham . . .	1,800 00	1,800 00	—	Grading . . . . .	1,700
Wrentham . . .	150 00	150 00	—	Grading . . . . .	200

The expenditures during the year in various counties for the maintenance and improvement of town and county ways, under chapter 525, Acts of 1910, were: —

COUNTY.	Amount.
Barnstable . . . . .	\$6,641 93
Berkshire . . . . .	31,557 36
Bristol . . . . .	32,942 56
Essex . . . . .	96,845 45
Franklin . . . . .	10,518 99
Hampden . . . . .	14,332 90
Hampshire . . . . .	9,314 97
Middlesex . . . . .	92,469 86
Norfolk . . . . .	61,561 66
Plymouth . . . . .	65,629 69
Worcester . . . . .	96,581 10

Details of the foregoing expenditures follow: —

*Barnstable County.*

Bourne . . . . .	\$5,469 75
Dennis . . . . .	9 23
Harwich . . . . .	300 00
Provincetown . . . . .	218 79
Sandwich . . . . .	644 16

*Berkshire County.*

Cheshire . . . . .	13,092 41
Egremont . . . . .	711 76
Florida . . . . .	1,000 00
Hancock . . . . .	7,485 86
Lanesborough . . . . .	1,985 80
New Ashford . . . . .	1,171 65
Richmond . . . . .	5,339 04
Williamstown . . . . .	770 84

*Bristol County.*

Berkley . . . . .	979 04
Dartmouth . . . . .	8,925 84
Dighton . . . . .	3,000 00
Freetown . . . . .	10,500 00
Raynham . . . . .	1,500 00
Rehoboth . . . . .	1,243 77
Somerset . . . . .	2,236 58
Swansea . . . . .	1,557 33
Westport . . . . .	3,000 00

*Essex County.*

Andover . . . . .	34,398 75
Boxford . . . . .	1,500 00
Danvers . . . . .	8,154 96
Essex . . . . .	1,300 00
Georgetown . . . . .	3,207 17
Groveland . . . . .	2,230 00
Ipswich . . . . .	3,685 16
Lynnfield . . . . .	7,721 75
Middleton . . . . .	10,117 25
Newbury . . . . .	4,152 10
North Andover . . . . .	2,135 72
Rowley . . . . .	5,296 32
Saugus . . . . .	8,009 27
Topsfield . . . . .	4,937 00



*Franklin County.*

Ashfield . . . . .	\$1,000 00
Buckland . . . . .	1,000 00
Montague . . . . .	5,565 33
New Salem . . . . .	2,953 66

*Hampden County.*

Agawam . . . . .	9,594 92
Brimfield . . . . .	363 77
East Longmeadow . . . . .	1,500 00
Monson . . . . .	226 00
West Springfield . . . . .	2,648 21

*Hampshire County.*

Hadley . . . . .	7,184 02
Pelham . . . . .	516 00
Williamsburg . . . . .	1,614 95

*Middlesex County.*

Acton . . . . .	5,201 99
Ashby . . . . .	85
Ashland . . . . .	2,057 62
Ayer . . . . .	12,072 71
Bedford . . . . .	733 33
Chelmsford . . . . .	14,458 33
Concord . . . . .	3,857 15
Dracut . . . . .	3,600 00
Dunstable . . . . .	1,500 00
Framingham . . . . .	4,283 01
Holliston . . . . .	2,149 34
Hopkinton . . . . .	3,000 00
Hudson . . . . .	511 27
Lexington . . . . .	5,000 00
Lincoln . . . . .	10,178 00
Littleton . . . . .	1,287 90
Maynard . . . . .	1,475 08
North Reading . . . . .	1,200 00
Pepperell . . . . .	644 89
Reading . . . . .	1,045 47
Sherborn . . . . .	2,975 00
Shirley . . . . .	204 20
Stoneham . . . . .	1,400 00
Stow . . . . .	1,732 70
Sudbury . . . . .	3,002 48
Tewksbury . . . . .	1,202 88

Tyngsborough . . . . .	\$722 45
Wakefield . . . . .	2,992 97
Wayland . . . . .	3,980 24

*Norfolk County.*

Bellingham . . . . .	1,000 00
Canton . . . . .	15,590 00
Franklin . . . . .	3,992 42
Holbrook . . . . .	7,996 96
Medway . . . . .	502 58
Millis . . . . .	1,000 00
Norfolk . . . . .	1,410 00
Norwood . . . . .	3,804 64
Randolph . . . . .	13,221 43
Sharon . . . . .	1,958 36
Walpole . . . . .	1,428 50
Westwood . . . . .	4,233 20
Weymouth . . . . .	3,972 00
Wrentham . . . . .	1,451 57

*Plymouth County.*

Bridgewater . . . . .	2,995 77
Carver . . . . .	4,436 11
East Bridgewater . . . . .	9,615 64
Halifax . . . . .	60 00
Hanson . . . . .	3,792 90
Kingston . . . . .	9,981 87
Lakeville . . . . .	9,256 24
Pembroke . . . . .	11,923 33
Plympton . . . . .	9,947 58
Wareham . . . . .	2,945 25
West Bridgewater . . . . .	675 00

*Worcester County.*

Barre . . . . .	1,990 12
Berlin . . . . .	1,500 00
Bolton . . . . .	1,560 00
Brookfield . . . . .	924 94
Dana . . . . .	600 00
Dudley . . . . .	41,437 96
Hardwick . . . . .	1,500 00
Harvard . . . . .	3,777 81
Holden . . . . .	282 25
Leicester . . . . .	6,720 00
Millbury . . . . .	3,783 35
North Brookfield . . . . .	3,000 00

Oxford . . . . .	\$439 37
Paxton . . . . .	7,075 76
Petersham . . . . .	1 40
Princeton . . . . .	180 59
Shrewsbury . . . . .	4,333 33
Southbridge . . . . .	13,878 09
Sturbridge . . . . .	3,265 00
Westborough . . . . .	331 13
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Total . . . . .	\$518,396 47



## HIGHWAYS IN THE FIVE WESTERN COUNTIES.

Chapter 221, General Acts of 1915, provided for the construction and completion, during 1915, 1916, 1917 and 1918, of about 163 miles of highway on 17 different specified routes located in 38 towns and 1 city in the five western counties of the Commonwealth, namely, Berkshire, Franklin, Hampden, Hampshire and Worcester; for the county commissioners of the county in which the road was located to lay out the highway according to plans prepared by the Massachusetts Highway Commission; for payment by the county of land and grade damages; for the issue of \$2,000,000 bonds to be used for the construction of these highways, and for the repayment to the Commonwealth, by the counties in which any of the highways were constructed, of 25 per cent of the expenditures in that county.

Chapter 572, Acts of 1920, in addition to authorizing the Division to expend an additional sum of \$1,000,000 before Nov. 30, 1924, for the purpose of completing the construction of certain highways in the five western counties of the State, under the provisions of chapter 221 of the General Acts of 1915, provides that one-fourth of any money which may be expended under the provisions of section 1 thereof for a highway in any county shall be repaid by the county to the Commonwealth in such instalments and at such times, within six years thereafter, as the Division, with the approval of the Auditor of the Commonwealth, shall determine; also that a sum equal to the money so repaid shall before Nov. 30, 1926, be expended by the Division without specific appropriation, either in completing the highways mentioned in said chapter 221, or in improving a highway in any town in the five western counties that is not situated upon one of the highways mentioned in said act, provided that the valuation of the town does not exceed \$1,000,000, the highway so improved to be a main highway connecting such town with its railroad station, with a main through highway, or with an adjoining city or town.

The total expenditures during the year for the construction of highways in Sheffield and Great Barrington; Dalton, Windsor and Goshen; Washington and Hinsdale; Huntington and Worthington; Peru; Belchertown and Ware; Agawam and Southwick; Ashfield and Goshen; Gill; Orange and Warwick; Wales; Chesterfield, Northampton and Williamsburg were \$212,443.77, details of which follow:—

*Route No. 1.*

Sheffield . . . . .	\$260 93
Great Barrington . . . . .	12 15

*Route No. 2.*

Dalton . . . . .	10 11
Windsor . . . . .	31 72
Goshen . . . . .	1,230 99

*Route No. 4.*

Washington . . . . .	18,614 48
Hinsdale . . . . .	35,751 79

*Route No. 5.*

Huntington . . . . .	136 00
Worthington . . . . .	42,211 98

*Route No. 6.*

Peru . . . . .	4,762 32
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*Route No. 8.*

Belchertown . . . . .	19,070 69
Ware . . . . .	120 14

*Route No. 9.*

Agawam . . . . .	73 56
Southwick . . . . .	50,355 28

*Route No. 10.*

Ashfield . . . . .	4,153 34
Goshen . . . . .	3 00

*Route No. 11.*

Gill . . . . .	13,438 39
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*Route No. 14.*

Orange . . . . .	\$10 21
Warwick . . . . .	14,630 85

*Route No. 16.*

Wales . . . . .	3,958 36
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*Route No. 17.*

Chesterfield . . . . .	3,283 09
Northampton . . . . .	20 62
Williamsburg . . . . .	303 77
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Total . . . . .	\$212,443 77



## CONSTRUCTION AND REPAIR OF WAYS IN CERTAIN TOWNS.

Chapter 344, General Acts of 1917, Part 1, section 23, provides that—

The Massachusetts highway commission shall allot for and expend in such towns the valuation of which does not exceed one million dollars, and in such amounts as it determines, five per cent of the amount appropriated each year for the construction of state highways, to be used in constructing and repairing ways in such towns; and it shall not be a condition precedent that such towns shall make any appropriation or contribution in excess of the usual annual appropriations for highway purposes to become eligible for an expenditure under this section. Said commission may also allot for and expend in such towns for like purposes, in addition to any expenditure hereinbefore provided for, a further amount of five per cent of said amount appropriated, if such towns appropriate or contribute, to be expended under the provisions of this section, an amount equal to the amount allotted by the commission. Said commission may also allot and expend a further amount of not more than five per cent of said amount appropriated each year for the construction of state highways in towns the valuation of which exceeds one million dollars, in such amounts as it determines, if such towns appropriate or contribute, to be expended under the provisions of this section, an amount, in addition to the average annual appropriations for repairs of highways in such towns for the preceding five years, exclusive of appropriations or contributions under this section, equal to the amount allotted by said commission. No town the valuation of which is less than one million dollars, and which makes no appropriation or contribution under the provisions of this section, shall receive in any one year more than forty per cent of its average annual appropriations for highway purposes for the preceding five years: provided, however, that said commission may allot in any year a sum not exceeding four hundred dollars to any such town, the said average annual appropriation of which does not exceed one thousand dollars. Such allotments and expenditures shall be made only upon the petition of the selectmen of the towns, and the provisions of section thirteen of Part 1 of this act shall apply thereto, but a way constructed or repaired under the provisions of this section shall not thereby become a state highway.

During the year the Division has contracted for work to be done in the towns named in the following table which also shows the type of road, the length contracted for, and the allotments or contributions by the State, towns and counties:—

## CONSTRUCTION AND REPAIR OF WAYS IN CERTAIN TOWNS.

(Chapter 344, General Acts of 1917, Part 1, section 23.)

TOWN.	CONTRIBUTIONS.			Type of Road.	Length con- tracted for (Feet).
	State.	Town.	County.		
Agawam . . .	\$10,000	\$10,000	-	Bituminous macadam .	3,700
Blandford . . .	1,250	1,250	-	Water-bound macadam .	1,700
Boxborough . . .	600	600	-	Gravel . . . . .	600
Chester . . . .	1,000	1,000	-	Gravel . . . . .	1,788
Colrain . . . .	1,600	1,600	-	Gravel . . . . .	2,000
Dana . . . . .	1,000	1,000	\$1,000	Gravel . . . . .	1,750
Falmouth . . . .	10,000	10,000	-	Sand and asphalt . . .	8,460
Gardner . . . .	2,500	2,500	-	Gravel . . . . .	2,350
Granby . . . . .	1,000	1,000	-	Gravel . . . . .	600
Lakeville . . . .	3,500	3,500	-	Bituminous macadam .	2,430
Ludlow . . . . .	750	1,500	-	Gravel . . . . .	700
Mendon . . . . .	500	500	-	Gravel . . . . .	700
Monson . . . . .	2,500	2,500	-	Gravel . . . . .	1,300
Nantucket . . . .	15,000	15,000	-	Sand and oil . . . . .	13,214
New Marlborough .	1,500	1,500	-	Gravel . . . . .	3,950
Orange . . . . .	1,000	1,000	-	Gravel . . . . .	1,700
Palmer . . . . .	30,000	30,000	-	Cement concrete . . .	4,211
Prescott . . . .	1,000	1,000	-	Gravel road and two bridges reconstructed.	250
Raynham . . . .	2,000	2,000	-	Water-bound macadam .	1,390
Shutesbury . . . .	200	200	-	Gravel . . . . .	400
Southwick . . . .	500	500	-	Gravel . . . . .	900
Tyringham . . . .	1,000	1,000	1,000	Water-bound macadam .	1,400
Wilbraham . . . .	5,000	5,000	-	Bituminous macadam .	2,350

The total expenditures during the year in various towns in Barnstable, Berkshire, Bristol, Franklin, Hampshire, Middlesex, Nantucket, Plymouth and Worcester counties were \$65,475.47. Details of the foregoing expenditures follow:—

*Barnstable County.*

Falmouth . . . . . \$14,500 00

*Berkshire County.*

Florida . . . . . 450 00  
Hinsdale . . . . . 103 76

New Marlborough . . . . .	\$2,931 90
Tyringham . . . . .	900 00
Williamstown . . . . .	21,194 67

*Bristol County.*

Raynham . . . . .	2,000 00
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*Franklin County.*

Orange . . . . .	1,000 00
Shutesbury . . . . .	200 00
Wendell . . . . .	600 00

*Hampshire County.*

Prescott . . . . .	1,225 00
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*Middlesex County.*

Boxborough . . . . .	600 00
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*Nantucket County.*

Nantucket . . . . .	13,250 00
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*Plymouth County.*

Bridgewater . . . . .	1,462 25
Lakeville . . . . .	3,500 00

*Worcester County.*

Dana . . . . .	1,000 00
Mendon . . . . .	500 00
Oakham . . . . .	57 89

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Total . . . . .	\$65,475 47
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REPAIR AND IMPROVEMENT OF PUBLIC WAYS, EXCLUSIVE  
OF STATE HIGHWAYS, IN CERTAIN TOWNS.

Chapter 155, General Acts of 1918, provides:—

SECTION 1. There may be expended from the treasury of the commonwealth for the repair and improvement of public ways, exclusive of state highways, in towns the valuation of which, determined as provided in section four, is less than three million dollars and in which the amount of such valuation, divided by the number of miles of such public ways, hereinafter referred to as the road mileage valuation, is less than fifty thousand dollars, such sums, not exceeding fifty dollars per mile, as the general court may from time to time appropriate therefor: provided, however, that such towns shall contribute or make available for use in connection therewith the following graded amounts for each and every mile of said public ways within their respective limits:—

Towns having a road mileage valuation of less than five thousand dollars, twelve dollars and fifty cents.

Towns having a road mileage valuation of five thousand dollars and less than seven thousand five hundred dollars, fifteen dollars.

Towns having a road mileage valuation of seven thousand five hundred dollars and less than ten thousand dollars, twenty-five dollars.

Towns having a road mileage valuation of ten thousand dollars and less than fifteen thousand dollars, forty dollars.

Towns having a road mileage valuation of fifteen thousand dollars and less than twenty thousand dollars, fifty dollars.

Towns having a road mileage valuation of twenty thousand dollars and less than thirty thousand dollars, seventy-five dollars.

Towns having a road mileage valuation of thirty thousand dollars and less than forty thousand dollars, one hundred dollars.

Towns having a road mileage valuation of forty thousand dollars and less than fifty thousand dollars, one hundred and twenty-five dollars.

The amounts appropriated as aforesaid and contributed by the towns shall be expended under the direction of the Massachusetts highway commission on such ways as the commission and the selectmen of the towns may from time to time agree upon.

SECTION 2. The said expenditures shall be made only upon the written petition of the selectmen of the towns, containing such information as the said commission may require. No work shall be done under this act in any district where dwelling houses or structures devoted to business are situated at intervals averaging less than two hundred feet for the distance of a quarter of a mile.

SECTION 3. The said towns may contract with the said commission for the performance of the work authorized hereby; or, if the right to do so is

waived by the selectmen, the commission may have the work done by such persons and in such manner as it may determine, in which event the towns shall pay their proportionate part of the expense when and as ordered by said commission. The cost of any materials, machinery or tools purchased by the commission for or on account of the work in any particular town shall be considered as a part of the expenditures in such town under this act; and such machinery or tools shall be the property of the commonwealth.

SECTION 4. Said commission shall from time to time determine, as nearly as possible, the number of miles of such public ways, in towns the valuation of which is less than three million dollars, and shall inform the selectmen of such towns of the contributions required under this act, the valuation of each town to be determined by the apportionments made for the collection of state and county taxes. . . .

During the year the Division has contracted for work to be done in the towns named in the following table which also shows the allotments or contributions by the State and towns: —

TOWN.	ALLOTMENTS.	
	State.	Town.
Acton . . . . .	\$3,000	\$6,800
Alford . . . . .	1,000	800
Ashburnham . . . . .	3,000	4,760
Ashby . . . . .	3,000	2,670
Ashfield . . . . .	3,000	4,000
Becket . . . . .	2,900	3,000
Belchertown . . . . .	3,000	5,440
Bellingham . . . . .	2,050	4,100
Berlin . . . . .	1,850	2,700
Blandford . . . . .	3,000	2,750
Bolton . . . . .	2,750	3,500
Boxborough . . . . .	1,300	1,050
Boxford . . . . .	2,500	4,000
Boylston . . . . .	1,600	1,600
Brimfield . . . . .	3,000	2,560
Carlisle . . . . .	3,000	1,500
Charlemont . . . . .	2,500	2,000
Charlton . . . . .	3,000	4,800
Chester . . . . .	3,000	3,550
Chesterfield . . . . .	2,600	1,300

TOWN.	ALLOTMENTS.	
	State.	Town.
Colrain . . . . .	\$3,000	\$3,600
Conway . . . . .	3,000	2,960
Cummington . . . . .	2,950	2,000
Dana . . . . .	2,500	1,250
Douglas . . . . .	3,000	5,475
Dunstable . . . . .	1,750	1,400
Eastham . . . . .	1,950	1,560
Enfield . . . . .	1,850	2,500
Florida . . . . .	2,050	3,075
Gill . . . . .	1,800	1,800
Goshen . . . . .	1,550	800
Granby . . . . .	2,300	2,500
Granville . . . . .	3,000	2,500
Greenwich . . . . .	1,950	1,500
Hampden . . . . .	1,700	1,360
Hancock . . . . .	1,450	2,000
Harvard . . . . .	3,000	6,390
Hawley . . . . .	2,450	1,000
Heath . . . . .	2,600	1,400
Hinsdale . . . . .	1,650	2,500
Holland . . . . .	1,500	375
Hopkinton . . . . .	3,000	5,175
Hubbardston . . . . .	3,000	3,500
Huntington . . . . .	2,050	3,200
Leverett . . . . .	1,900	2,000
Leyden . . . . .	2,050	1,000
Littleton . . . . .	1,850	3,700
Medway . . . . .	2,000	5,000
Mendon . . . . .	2,150	2,150
Middlefield . . . . .	1,800	700
Monson . . . . .	3,000	6,300
Monterey . . . . .	2,500	1,250
Montgomery . . . . .	1,600	800
New Braintree . . . . .	2,750	1,375
New Marlborough . . . . .	3,000	4,780
New Salem . . . . .	3,000	1,500
Northfield . . . . .	3,000	5,325
Norton . . . . .	2,850	5,700



TOWN.	ALLOTMENTS.	
	State.	Town.
Oakham . . . . .	\$2,350	\$1,700
Otis . . . . .	2,950	1,400
Paxton . . . . .	1,650	1,320
Pelham . . . . .	2,000	1,650
Peru . . . . .	2,250	900
Phillipston . . . . .	2,050	1,100
Plainfield . . . . .	2,400	1,300
Plympton . . . . .	1,700	1,800
Prescott . . . . .	1,950	800
Princeton . . . . .	3,000	5,000
Raynham . . . . .	2,200	3,300
Rehoboth . . . . .	3,000	4,040
Rowe, . . . . .	2,050	1,600
Royalston . . . . .	3,000	3,900
Rutland . . . . .	3,000	3,640
Sandisfield . . . . .	3,000	3,000
Savoy . . . . .	2,800	700
Sherborn . . . . .	2,500	8,500
Shutesbury . . . . .	2,000	1,000
Southampton . . . . .	3,000	2,440
Southwick . . . . .	2,850	6,500
Sterling . . . . .	3,000	5,000
Stow . . . . .	2,250	3,375
Sturbridge . . . . .	3,000	3,520
Sunderland . . . . .	1,750	2,625
Sutton . . . . .	3,000	4,500
Templeton . . . . .	3,000	8,300
Tolland . . . . .	2,100	1,200
Townsend . . . . .	3,000	3,800
Tyringham . . . . .	1,150	1,150
Warwick . . . . .	2,750	2,750
Washington . . . . .	2,550	1,000
Wendell . . . . .	2,350	2,400
Westhampton . . . . .	2,100	1,000
Westminster . . . . .	3,000	3,440
Whately . . . . .	1,950	3,000
Williamsburg . . . . .	2,100	4,200
Windsor . . . . .	3,000	825
Worthington . . . . .	3,000	2,500

The expenditures during 1920, in various counties, for the repair and improvement of public ways, exclusive of State highways, under chapter 155, General Acts of 1918, were:—

COUNTY.	Amount.
Barnstable . . . . .	\$1,768 69
Berkshire . . . . .	32,108 00
Bristol . . . . .	8,371 59
Essex . . . . .	2,500 00
Franklin . . . . .	43,568 02
Hampden . . . . .	24,677 34
Hampshire . . . . .	35,912 24
Middlesex . . . . .	22,037 12
Norfolk . . . . .	3,950 00
Plymouth . . . . .	1,700 00
Worcester . . . . .	53,357 57

Details of the foregoing expenditures follow:—

*Barnstable County.*

Eastham . . . . . \$1,768 69

*Berkshire County.*

Alford . . . . .	1,040 76
Becket . . . . .	2,147 99
Florida . . . . .	2,325 38
Hancock . . . . .	2,207 56
Hinsdale . . . . .	1,409 07
Monterey . . . . .	1,548 88
New Marlborough . . . . .	2,650 00
Otis . . . . .	3,366 00
Peru . . . . .	2,167 84
Sandisfield . . . . .	2,792 84
Savoy . . . . .	2,798 26
Tyringham . . . . .	1,150 00
Washington . . . . .	2,421 01
West Stockbridge . . . . .	1,031 08
Windsor . . . . .	3,045 33

*Bristol County.*

Norton . . . . .	\$5,350 00
Raynham . . . . .	521 59
Rehoboth . . . . .	2,500 00

*Essex County.*

Boxford . . . . .	2,500 00
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*Franklin County.*

Ashfield . . . . .	3,182 97
Charlemont . . . . .	2,517 12
Colrain . . . . .	3,088 10
Conway . . . . .	2,738 87
Gill . . . . .	1,879 90
Hawley . . . . .	2,456 11
Heath . . . . .	2,050 00
Leverett . . . . .	3,675 00
Leyden . . . . .	2,169 51
Monroe . . . . .	669 16
New Salem . . . . .	3,205 52
Northfield . . . . .	2,900 00
Rowe . . . . .	2,224 16
Shutesbury . . . . .	2,142 11
Sunderland . . . . .	1,300 00
Warwick . . . . .	2,742 65
Wendell . . . . .	2,676 84
Whately . . . . .	1,950 00

*Hampden County.*

Blandford . . . . .	2,692 20
Brimfield . . . . .	2,834 15
Chester . . . . .	2,628 88
Granville . . . . .	3,179 01
Hampden . . . . .	1,747 13
Holland . . . . .	1,658 55
Monson . . . . .	2,950 00
Montgomery . . . . .	2,181 61
Southwick . . . . .	3,166 17
Tolland . . . . .	1,639 64

*Hampshire County.*

Belchertown . . . . .	3,082 40
Chesterfield . . . . .	2,856 08
Cummington . . . . .	2,150 00



Enfield . . . . .	\$2,274 55
Goshen . . . . .	1,436 01
Granby . . . . .	2,060 70
Greenwich . . . . .	2,300 96
Hatfield . . . . .	436 78
Huntington . . . . .	1,450 50
Middlefield . . . . .	1,879 68
Pelham . . . . .	2,316 35
Plainfield . . . . .	2,654 96
Prescott . . . . .	2,377 25
Southampton . . . . .	3,097 59
Westhampton . . . . .	1,005 41
Williamsburg . . . . .	1,983 02
Worthington . . . . .	2,550 00

*Middlesex County.*

Acton . . . . .	2,825 00
Ashby . . . . .	2,775 00
Boxborough . . . . .	1,050 00
Carlisle . . . . .	2,999 62
Dunstable . . . . .	1,750 00
Hopkinton . . . . .	1,850 00
Littleton . . . . .	1,400 00
Sherborn . . . . .	2,475 00
Stow . . . . .	2,212 50
Townsend . . . . .	2,700 00

*Norfolk County.*

Bellingham . . . . .	1,950 00
Medway . . . . .	2,000 00

*Plymouth County.*

Plympton . . . . .	1,700 00
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*Worcester County.*

Ashburnham . . . . .	2,800 00
Berlin . . . . .	1,849 32
Bolton . . . . .	2,682 50
Boylston . . . . .	1,532 50
Charlton . . . . .	2,437 58
Dana . . . . .	2,500 00
Douglas . . . . .	3,000 00
Harvard . . . . .	2,475 00
Hubbardston . . . . .	2,952 83
Mendon . . . . .	2,000 00



## KEEPING CERTAIN HIGHWAYS OPEN DURING THE WINTER MONTHS.

Chapter 488 of the Acts of 1920, approved May 19, 1920, provides: —

That the Department of Public Works may co-operate with city and town authorities in keeping certain highways open and reasonably passable for vehicles during the winter months, and for this purpose may accept financial or other assistance from individuals, partnerships or corporations.

That the co-operation of the Commonwealth shall consist in furnishing such equipment as the Department deems suitable, and the supervision of the use of the same.

That the highways to be kept open and passable under this act shall be selected by said Department with regard to their importance for commercial uses and with regard to the co-operation and aid to be rendered by cities and towns, individuals, partnerships and corporations in carrying on the work, but no highway shall be selected therefor without the approval of the municipal authorities.

That work carried on under this act shall be supplemental to work undertaken and performed by cities and towns under existing laws.

That nothing in this act shall render the Commonwealth liable to pay any damages which it is not liable to pay under existing laws, nor shall this act in any way relieve cities and towns from keeping their highways clear from ice and snow as required by existing laws.

That for the purposes of this act said Department may expend during 1920 and 1921 from such sums as may hereafter be appropriated by the General Court a sum not exceeding \$50,000.

Up to Dec. 1, 1920, sixty-two snow plows were purchased by the Division, and 12,600 feet of snow fence made, delivered and set up. The fence was distributed as follows: —

	Feet.
Pittsfield-Lenox . . . . .	600
Pittsfield-New York line . . . . .	600
Northampton-Greenfield . . . . .	1,260
Westfield-Woronoco : . . . . .	660
Boston-Springfield . . . . .	8,820
Reading-Stoneham . . . . .	660
Total . . . . .	12,600



Snow plows were distributed as follows: —

Youlden, Smith & Hopkins of Boston . . . . .	5
Lowell Bleachery of Lowell . . . . .	1
Massachusetts Department of Public Works, Division of Highways	3
Strathmore Paper Company of West Springfield . . . . .	1
	—
Total . . . . .	10

Arrangements were also made to furnish plows, as follows: —

Springfield Republican . . . . .	2
Allen Manufacturing Company of Barre . . . . .	2
Ketchen Milk Company of Belchertown . . . . .	1
Spencer Bus Line . . . . .	2
Worcester City Truck Company . . . . .	2
City of Peabody . . . . .	1
	—
Total . . . . .	10

These ten plows have been approved for use on the following main line of highways: —

Barre-Worcester.  
 Belchertown-Holyoke.  
 Boston-Ayer.  
 Boston-Lawrence-Lowell-Haverhill.  
 Peabody-Lynn.  
 Westfield-Springfield-Worcester.

The total expenditure to Dec. 1, 1920, was \$18,923.

## THE REGULATION OF ADVERTISING SIGNS AND DEVICES WITHIN THE PUBLIC VIEW.

Chapter 545 of the Acts of 1920, approved May 27, 1920, provides: —

SECTION 1. The division of highways of the department of public works, hereinafter called the division, shall, within sixty days after the passage of this act, make rules and regulations for the proper control and restriction of billboard and other advertising devices on public ways or on private property within public view of any highway, public park or reservation, and the division may, from time to time, amend, repeal or add to the said rules and regulations. The rules and regulations so made may require that billboards or other devices as aforesaid shall be licensed in accordance with the provisions thereof and of this act. The said rules and regulations need not be uniform throughout the commonwealth, and may prescribe license fees, to be fixed with regard to the cost of administering the provisions of this act.

SECTION 2. The division shall, before establishing or amending rules or regulations hereunder, hold duly advertised public hearings in the city of Boston and elsewhere in the commonwealth as it deems necessary or expedient.

SECTION 3. Cities and towns may, by ordinance or by-law, subject to the approval of the division and not inconsistent with the provisions of this act or of the rules and regulations made by the division, further regulate and restrict the said billboards or other devices within their respective limits.

SECTION 4. No person, firm, association or corporation shall post, erect, display or continue to maintain any billboard or other advertising device, whether already erected at the time when this act takes effect or not, on any public way or on private property within public view from any highway, public park or reservation, which advertises or calls attention to any business, article, substance or any other thing, unless such billboard or device conforms to the rules, regulations, ordinance or by-laws established under authority of this act: provided, however, that nothing herein contained shall apply to signs or other devices erected and maintained in conformity with existing law, advertising or indicating the person occupying the premises in question or the business transacted thereon, or advertising the property itself or any part thereof as for sale or to let.

SECTION 5. This act shall not apply to signs and other devices on or in the rolling stock, station, subways or structures of or used by common carriers.

SECTION 6. The supreme judicial court and the superior court shall have jurisdiction in equity on petition of the attorney-general or of any

city or town, or of any officer thereof or of any interested party, to restrain the erection or maintenance of any billboard, sign or device erected or maintained in violation of the provisions of any rule, regulation, ordinance or by-law adopted under the provisions of this act, and to order its removal or abatement as a nuisance.

SECTION 7. Any violation of any rule, regulation, ordinance or by-law adopted hereunder shall be punished by a fine of not more than one hundred dollars. Whoever unlawfully maintains a billboard, sign or advertising device as herein described for a period of twenty days after conviction thereof, shall be deemed to be guilty of a second offense and shall be further punished by a fine not exceeding five hundred dollars.

After public notice the Division held three hearings, at which individuals, representatives of various municipalities and corporations, and others, appeared and were fully heard. The following rules and regulations were adopted, to be in force on and after Dec. 31, 1920: —

#### SECTION 1. DEFINITIONS.

Terms used in the following rules and regulations shall be construed as follows: —

“Division” shall mean Division of Highways, Department of Public Works.

“License” shall mean the right to carry on the business of outdoor advertising by means of signs and billboards.

“Permit” shall mean the right to locate and maintain a particular sign.

“Person” shall mean any individual, partnership or corporation who erects or causes to be erected outdoor advertising signs, or is engaged in carrying on the business of outdoor advertising.

“Sign” shall mean any form of outdoor advertising for which a permit may be petitioned, or for which a permit may be granted under the provisions of these regulations.

“Outdoor advertising” shall mean advertising, the control of which, under the provisions of chapter 545, Acts of 1920, is vested in the Division of Highways, Department of Public Works.

#### SECTION 2. LICENSES.

A. No person shall engage in the business of advertising in this Commonwealth by means of outdoor advertising signs without first having obtained a license from the Division of Highways, Department of Public Works.

B. Applications for licenses may be made to the Division upon blanks prepared under its authority.

C. Applications shall contain such information as the Division may require, and must be accompanied by the proper fee.



D. The fee shall be \$50, and the license shall be in force for one year unless earlier suspended or revoked.

E. Applications for renewal of licenses may be made not later than thirty days prior to the date of expiration, and must be accompanied by the annual fee of \$50.

F. The Division reserves the right to suspend or revoke for cause any license issued by it under the provisions of this section.

### SECTION 3. PERMITS.

A. No sign shall be located or maintained except as hereinafter provided.

B. No sign shall be located until an application for a permit has been filed with the Division and the permit granted.

C. Applications shall be on forms prepared under the direction of, and furnished by, the Division, and shall contain such information as the Division may require.

D. Each sign shall carry the serial number of the permit authorizing its location in figures of a size approved by the Division.

E. Each application for the annual permit shall be accompanied by a fee of \$1, to be known as the examination fee; and upon issuance of a permit an additional fee of \$1, to be designated as an inspection fee, shall be paid by the licensee.

F. Permits shall be valid and in force, unless they are revoked by the Division, upon payment of the annual fees, which shall be due on the first day of July of each year. Failure to pay such fees within thirty days of the first day of July will be deemed sufficient reason for forthwith cancelling such permits.

G. The Division reserves the right to annul and revoke for cause any permit issued by it under the provisions of this section.

### SECTION 4. LOCATIONS.

A. No outdoor advertising shall be permitted within the bounds of any highway, nor on any location within 300 feet of any park, parkway, playground, State reservation or public building.

B. No outdoor advertising shall be permitted upon any rock or tree, nor upon any fence or pole bordering on any public highway.

C. The location of all signs shall be clearly stated in permits as issued.

### SECTION 5. CHARACTER AND MAINTENANCE.

A. Signs shall be of such size, shape and material as the Division shall approve, and shall be so erected and maintained as to conform to the provisions of the laws of the Commonwealth relating to fire hazard.

B. It shall be the duty of the licensee maintaining a sign under a permit from the Division to keep it and the ground about the same free from all rubbish, or any material which the Division may consider disadvantageous to the community.

C. The Division reserves the right to pass on all matter displayed on any sign maintained under a permit from the Division, and may require the licensee to remove any objectionable matter.

D. If the licensee fails to meet the requirements of this section, such failure shall be deemed sufficient cause for the revocation of the permit under which said sign was erected and maintained.

#### SECTION 6. RESTRICTIONS.

No permits shall be granted for the location or maintenance of signs near certain highways in territory which, in the opinion of the Division, is of unusual scenic beauty. Such places will be designated by the Division from time to time.

#### SECTION 7. REMOVALS.

All signs now located within the Commonwealth, and in any way affected by these rules and regulations, must be removed on or before July 1, 1921, unless permits for the location or maintenance thereof shall have previously been granted; provided, however, that signs for the maintenance of which applications shall have been made but not acted upon by the Division upon that date may be permitted to remain until such time as favorable action thereon is taken by the Division, or, in case of the Division's refusal to issue a permit, for a further period of ninety days from the date on which notice of such refusal has been mailed to the applicant.

#### SECTION 8.

These rules and regulations shall take effect Dec. 31, 1920.



## AIRCRAFT.

Chapter 306 of the General Acts of 1919, approved July 12, 1919, repealed chapter 663 of the Acts of 1913 regarding the use of aircraft. The act of 1919 aforesaid provides: —

SECTION 1. It shall be unlawful for any person to operate aircraft of any kind in this commonwealth unless he is licensed and the aircraft is registered, either by the Massachusetts highway commission, the joint army and navy board on aeronautic cognizance, or a federal board or department established by congress: provided, however, that the provisions of this section shall not apply to military or naval aviators while in the service of the United States, or of this commonwealth, nor to aircraft owned by the United States government or by this commonwealth, nor to unlicensed civilians when accompanied by a person licensed as aforesaid or by a military or naval aviator, but such licensed person or military or naval aviator shall be liable for the violation of any provision of this act committed by such unlicensed person.

SECTION 2. The Massachusetts highway commission may issue without examination a license hereunder to any person who was at any time commissioned as an aviator in the United States army or navy or naval reserve corps, or to any applicant who has passed an examination satisfactory to the commission and proved that he is skilled in the flying of aircraft, whether such examination is held by the commission or by some other officer or board approved by the commission.

SECTION 3. No person shall operate aircraft over buildings, persons or animals in such a manner or at such an altitude as to endanger his own life, or the lives or safety of those below him, or the safety of himself and his passengers, if he be carrying passengers, nor shall any person operate aircraft over the thickly settled district of any city or town except for the purpose of embarking from or alighting on designated landing places.

SECTION 4. No person shall operate aircraft in such a manner as to endanger the lives or safety of the public by the performance of unusual or dangerous maneuvers over any massed assembly of one hundred or more persons in the open, whether such persons be grouped in a grandstand or massed in an open field; nor shall any person throw or drop any missile or other article from any aircraft in flight, except over grounds temporarily or permanently devoted to flying, or over open water.

SECTION 5. Except in a case of emergency no person shall land aircraft in highways or public parks or other public grounds without permission from the authorities in charge thereof.

SECTION 6. Landing places for aircraft may, from time to time, be designated, set apart and marked, by the commission, or other public officials who are in charge of any land owned or controlled by the common-



wealth, or by any city or town, or by the metropolitan park commission, and said officials are hereby authorized to make reasonable rules and regulations governing the use of such landing places by aviators and other persons, and may change the same from time to time. All aviators and other persons using such landing places shall at all times comply with the rules and regulations made as aforesaid.

SECTION 7. The Massachusetts highway commission may prepare rules and regulations, from time to time, governing the use and operation of aircraft and relative to the licensing of operators thereof. Such rules and regulations shall take effect when approved by the governor and council and published in at least one newspaper printed and published in each county of the commonwealth, and such publication shall be sufficient notice to all persons.

SECTION 8. The fee for a license to operate aircraft shall be five dollars. The fee for the registration of aircraft shall be two dollars.

SECTION 9. Whoever violates any provision of this act or any rule or regulation made hereunder shall be punished by a fine of not less than ten nor more than five hundred dollars, or by imprisonment for not less than one month nor more than six months, or by both such fine and imprisonment.

SECTION 10. Chapter six hundred and sixty-three of the acts of nineteen hundred and thirteen is hereby repealed.

Up to Dec. 1, 1919, the Massachusetts Highway Commission, acting under authority of chapter 663 of the Acts of 1913, registered five machines and issued licenses to six persons.

On May 18, 1920, the following rules and regulations to govern the registration of aircraft and the licensing of aircraft operators were made by the Division, and the same were approved by the Governor and Council May 26, 1920: —

1. Every applicant for a license to operate aircraft shall file an application in accordance with the form submitted by the Department of Public Works, Division of Highways, accompanied by the fee required by law.

2. Every applicant for aircraft registration shall file an application in accordance with the form submitted by the Department of Public Works, Division of Highways, accompanied by the fee required by law.

3. Applications for the registration of an aircraft or for a pilot's license shall be referred to such agents as may be designated by the Division of Highways, for examination and approval, and if it shall be deemed necessary, applicants for pilots' licenses may be required to take an examination by such agent or agents as the Division of Highways may designate.

4. Aircraft registered under the provisions of the laws of the Commonwealth of Massachusetts shall carry an identification number of such size

and displayed in such a manner as may be definitely ordered by the Division of Highways when issuing license for registration.

5. Upon complaint in writing that any operator under a license issued by the Commonwealth of Massachusetts has in any way operated an aircraft to endanger public life and property, the operator shall be summoned before the Division of Highways for a hearing. Pending such hearing the license of said operator shall be suspended, and following such hearing may be definitely revoked.

The following forms of application for airplane registration and pilot's application, also forms of certificate of airplane registration and of operator's license, have been adopted: —

APPLICATION FOR AIRPLANE REGISTRATION.

Application is hereby made for registration of airplane as described below.

1. Type of machine.....
2. Full name of maker.....
3. Maker's number.....
4. Motor number.....
5. Horse power.....
6. Number of cylinders.....
7. Bore or internal diameter of cylinders.....
8. Owner of machine.....  
(Individual, co-partnership, association or corporation.)
9. Is machine insured?.....
10. Name and address of insurance company.....
11. Machine is to be used for following purposes (state whether for pleasure, business, passenger carrying, or other commercial use):  
.....  
.....
12. If for passenger carrying, designate routes, schedules and rates to be charged  
.....  
.....  
.....

Signed by.....

Address.....Street.....City.....State.

.....ss. ....192

Then personally appeared....., who made oath that the foregoing statements were true to the best of his knowledge and belief.

.....

Investigated and approved.....

.....

.....192 .....

License to issue.....

*Commissioner of Public Works.*

PILOT'S APPLICATION.

Name.....Date of birth.....  
Sex.....Height....Ft....In. Color of hair.....Color of eyes.....  
Address.....  
Qualified by what authority.....  
Date of qualification.....  
Name of field or school where qualified.....  
Conditions complied with.....  
Make of machine used.....  
Hours flown to date of qualification.....Hours flown since.....  
Date of last solo flight.....19.... Minutes flown.....  
Approximate hours and types of machines flown since date of qualification:

Type of Aircraft	Hours	Type of Aircraft	Hours
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Has applicant ever completed a regular course of aerial acrobatics?.....  
If so, where and when?.....  
Do you intend to operate aircraft as a private owner, pilot, corporation pilot, or for  
revenue passenger carrying?.....

Give records of accidents and / or breakages to planes.....  
.....  
.....

Has applicant any physical or other disability, such as defective vision, weak  
heart, etc.?.....  
If so, give particulars.....

Are you familiar with the rules of the air, the rules in general use for getting away  
and landing at public aerodromes, and the rules in force at United States Army  
aerodromes?.....  
Give names and addresses of two licensed pilots for references:

.....  
.....

I hereby certify that I am fitted by training and experience to safely operate air-  
craft in Massachusetts.

Name..... Address:  
..... Street..... City..... State.  
.....ss.....192

Then personally appeared....., who made oath  
that the foregoing statements were true to the best of his knowledge and belief.

.....  
Investigated and approved.....  
.....192.....

License to issue.....

Commissioner of Public Works.



CERTIFICATE OF AIRPLANE REGISTRATION No. ....

An airplane owned by.....  
residing at No.....Street  
.....Mass., is  
hereby registered under the number above written, in accordance with the laws of  
this State.

*Description of Vehicle.*

.....  
.....Engine number,.....  
Horse            Number of  
power.....; cylindrs.....; Bore.....; Fee paid \$.....  
Date.....192 .

JOHN N. COLE,  
FRANK D. KEMP,  
JAMES W. SYNAN,  
*Department of Public Works,*  
*Division of Highways.*

Approved.

*Commissioner of Public Works.*

This registration will expire.....192 .

AIRPLANE OPERATOR'S LICENSE No. ....

....., residing at  
No.....St.,.....Mass., is  
hereby licensed to operate an airplane in accordance with the law of this State, and  
under the rules and regulations established by the Department of Public Works.

*Description of Person licensed.*

Date of birth.....Sex.....  
Height....Ft....In. Color of hair.....Color of eyes.....  
Date issued.....192 .

JOHN N. COLE,  
FRANK D. KEMP,  
JAMES W. SYNAN,  
*Department of Public Works,*  
*Division of Highways.*

Approved.

*Commissioner of Public Works.*

This license will expire in one year from date.

During the year the Division has made registration of air-  
craft and issued certificates and airplane operators' licenses, as  
follows: —

## REGISTRATION OF AIRCRAFT.

Certificate No.	NAME.	Fee received.	Date.
1	International Aircraft Corporation, 80 Boylston Street, Boston.	\$2 00	June 25, 1920
2	International Aircraft Corporation, 80 Boylston Street, Boston.	2 00	June 25, 1920
3	American Aerial Corporation, 462 Boylston Street, Boston	2 00	June 30, 1920
4	Albert H. Ternstall, Main Street, Brookfield . . .	2 00	July 14, 1920
5	Robert D. Fairbanks, 25 Carver Road, Newton Highlands.	2 00	July 23, 1920
6	Colonial Aerial Transportation Company, Inc., 743 Massachusetts Avenue, Arlington.	2 00	Aug. 17, 1920
7	George H. Watkins, 7 Story Street, Cambridge . . .	2 00	Sept. 27, 1920
8	Brooks, Banks & Smith Corporation, 21 Smith Block, Framingham.	2 00	Nov. 15, 1920

## AIRPLANE OPERATORS' LICENSES.

License No.	NAME.	Fee received.	Date.
1	Albert H. Ternstall, Main Street, Brookfield . . .	\$5 00	July 14, 1920
2	Frederick M. Stieber, 462 Boylston Street, Boston . .	5 00	July 16, 1920
3	Jack A. Mitchell, 743 Massachusetts Avenue, Arlington .	5 00	Aug. 3, 1920
4	Linwood W. Tracy, 91 Gainsboro Street, Boston . . .	5 00	Aug. 9, 1920
5	Hallock Rouse, 117 Commercial Street, West Lynn . .	5 00	Oct. 8, 1920
6	Melvin W. Hodgdon, 8 Indiana Avenue, Somerville . .	5 00	Sept. 9, 1920
7	George H. Watkins, 7 Story Street, Cambridge . . .	5 00	Sept. 27, 1920
8	Irl J. Elliott, Point of Pines, Revere. Care of E. J. Morgan	5 00	Oct. 8, 1920
9	John McDonough, 42 Delano Street, Revere. Care of A. B. Clark.	5 00	Oct. 25, 1920
13	Thomas Hayes Potter, 42 Delano Avenue, Revere . .	5 00	Oct. 18, 1920

## RECOMMENDATIONS FOR LEGISLATION.

## DIVISION OF HIGHWAYS.

*Land and Buildings for Storage and Other Purposes.*

1. The Commonwealth now has invested a large sum of money in tools and equipment used in connection with the construction and maintenance of highways. In addition to the property owned, the Division of Highways is responsible for the proper care of a large number of motor cars and trucks allotted to the Commonwealth by the Federal government. It is desirable that facilities should be provided for taking care of this machinery, and in a number of cases it has been found very difficult to secure proper accommodations that may be rented. It is believed that the State may very wisely purchase suitable sites or buildings, or both, for better providing these needed facilities, and it is recommended that legislation be passed in accordance with the draft of an act submitted.

*Closing Highways under Construction.*

2. The rapid increase in travel over the highways of the Commonwealth is making it increasingly difficult to control such operations as are necessary when construction and maintenance work is under way. In order that it may be possible to relieve this condition, it is recommended that legislation be passed in accordance with the bill submitted, to authorize the Division of Highways to close to travel public ways that may be under construction or improvement by it or by any agent it may authorize to do the work.

*Authority to open up Dangerous Corners.*

3. To more clearly define the powers of the Division of Highways in opening up dangerous corners and removing obstructions that tend to make travel on the highways more dangerous, it is believed that the law now in force relative to this matter should be amended substantially as set forth in the draft of an act presented, entitled "An Act relative to entry upon private land and the removal of trees by the Division of Highways of the Department of Public Works."



*Insurance for Operators of State-owned Motor Vehicles.*

4. The increasing hazards attending the operation of motor vehicles on the highways call for consideration for insurance that shall properly protect motor vehicle operators and others who may be involved in motor vehicle operation. It seems reasonable and proper that where employees of the Department are operating motor vehicles under orders from Department heads, and in carrying on the work required of them, the expense of such protection as insurance provides should be assumed by the Commonwealth. It is recommended that legislation to this end be enacted, and the draft of an act to provide for such payment is submitted.

*Extension of Workmen's Compensation.*

5. Under the existing laws, laborers and mechanics employed in the service of the Commonwealth are assured certain compensation in case of injuries, sickness and death, but no compensation is provided for engineers and their assistants exposed to the same liability to injury, accident and death on account of their employment. It is recommended that a law be passed so that all of these groups shall stand in the same relation toward the Commonwealth, in connection with a fair compensation, as do the laborers and mechanics under the present law. A draft of an act is submitted to provide for this extension.

*A More Definite Control of Highway Maintenance.*

6. Under the present provisions of law much work is carried on by the Division of Highways in co-operation with the several counties, cities and towns throughout the Commonwealth. Experience has demonstrated that after the construction work is completed there have been many cases where repairs and maintenance have not been properly taken care of by the particular agents responsible for them. In order that the work of maintenance that is so essential to the long life of expensively constructed roads may be more surely cared for, recommendation is made for a change in the existing law that shall provide for an agreement for maintenance as a part of the original contract for construction, and further provide for

an earlier opportunity for the State to proceed with any necessary repairs and work of maintenance than it is possible to do under the present law. A draft of an act is submitted to bring about this change.

*Fixing Authority for Counties and Towns to make Payments for Highway Work.*

7. There has arisen some question as to the full authority of county commissioners to carry out agreements that may be made with the Division of Highways in connection with co-operative work on the highways. To definitely authorize county commissioners to make payments to either the Division or the selectmen of towns, on account of such proportion of the work as the county may be responsible for, legislation is recommended as submitted in the draft of an act.

Much in the same way, town authorities frequently find themselves unable to provide the funds necessary to finance work for which contracts have been entered into. The Department recommends as a relief to this situation the passage of a bill submitted relative to borrowing of money by towns for such temporary needs.

*Altering and abandoning State Highway Locations.*

8. To more definitely fix the action necessary by the Division of Highways in altering the location of a State highway in a city or town, or in the abandonment of a portion of State highway already located in a city or town, certain changes in the law are necessary. The drafts of two acts embodying the necessary changes are submitted for consideration.

*Registry of Motor Vehicles.*

Massachusetts is fortunate in the laws in force for the control and regulation of motor vehicles. Changing conditions, however, require some few modifications to more definitely determine certain issues that have arisen during the past year, and to more satisfactorily control in some other cases. Legislation is recommended in the form of four different bills, the passage of which is respectfully requested: —



9. To authorize the Commissioner of Public Works to appoint an acting registrar of motor vehicles.

10. To eliminate certain petty charges in connection with number plates that may be furnished for other departments registering automobiles in the Motor Vehicle Registry.

11. To make clear the right of officers, charged with the responsibility of enforcing the motor vehicle laws, to more effectively control persons operating motor vehicles while under the influence of intoxicating liquors.

12. To provide a fitting punishment for persons who operate motor vehicles after licenses to so operate have been suspended or revoked.

#### *Motor Vehicle Fees.*

13. The increased cost of highways is making a burden upon the Commonwealth impossible for it to bear unless increased revenue is provided for their construction and maintenance. The road that cost \$20,000 a mile when the fees for motor vehicle registration now in force were fixed, now costs in excess of \$40,000 a mile. Repairs and maintenance work involve a corresponding increase. The highways constructed any time previous to 1915 are to-day requiring new surfacing and in almost every case a widened surface to satisfactorily carry the heavy traffic. To meet this expense the burden may properly be placed upon the motor vehicle in the interest of which the present exacting demands are being made. It is believed that the time has come for making the fees for legislation provide a sufficient revenue to care for this increased demand, and the draft of an act is presented establishing a new schedule of rates in harmony with highway needs and the present cost of everything entering into construction and maintenance of highways.



## APPENDIX.

## HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920.

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed to Dec. 1, 1920.
		From --	Direction.	Length (Miles).	
Abington	1900-1-3	Brockton line	Easterly	1.729	\$57,403 75
Abington	1905-7	Holbrook line	Easterly	1.639	
Abington	1911	Weymouth line	Southerly	1.955	
Abington	1913	North Abington	Southwesterly	1.080	
Abington	1915	Whitman line to Maple Street	Northwesterly	.537	
Acton	1899-1900-1-2	Concord line to Littleton line	Northwesterly	3.711	83,416 14
Acton (Harvard Pike)	1901-7-12-13	Boxborough line to Concord line	Easterly	3.967	
Acton	1919	Connection at railroad crossing	—	.188	
Acushnet	1901-3	Rochester line to Rochester line via Long Plain	—	2.797	
Acushnet	1897	New Bedford line	Westerly and northerly	.599	
Acushnet	1917	Fairhaven line	Northerly	1.207	24,460 44
Adams	1897	Chester line (Maple Grove)	Northerly	.569	
Adams	1908	Cheshire line (Orchard Street)	Northerly	1.459	
Agawam	1903-4-6-9-11	Southend Bridge to Connecticut line	Southerly	3.093	
Amesbury	1899-1901-3-4	Merrimac line	Easterly	2.243	
Amesbury	1906-7-12	Salisbury line	Westerly	1.052	38,043 13
Amherst	1901-4	Hadley line	Northwesterly	.971	
Amherst	1913	Sunderland line	Southwesterly	.796	
Amherst	1915	South Hadley line	Northerly	2.296	
Amherst	1919	End of 1913 section	Southerly	.485	
Amherst	1919	Boston & Maine Railroad bridge to 1915 section	—	2.508	71,922 87
Andover	1895-6	Lawrence line	Southerly	1.206	
Andover	1897-9-1900-2-3, 20	North Reading line	Northerly	3.147	
Arlington	1916	Lexington line	Southeasterly	1.297	
					40,239 41

HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length con- struction to Dec. 1, 1920.
		From —	Direction.	Length (Miles).	
Ashburnham	1911	New Hampshire State line	Southeasterly	.672	\$23,212 78
Ashburnham	1916	Winchendon line to Winchendon line <sup>1</sup>	Northeasterly	1.699	
Ashby	1894-5-6-7-8-9	Fitchburg line to Ashby post office.	Southeasterly	3.776	108,620 19
Ashby	1910-11-12	Townsend line	Northerly	3.571	
Ashby	1917	Ashburnham line	Southwesterly	1.526	35,282 05
Ashfield	1897-8	One mile north of Ashfield post office	Easterly	1.826	
Ashland	1903	Southborough line	Northerly	1.608	13,822 90
Ashland	1910	Frammingham line	Easterly	1.473	
Athol	1895-6	Orange line	Southerly	1.725	103,130 10
Athol	1902-3	Phillipston line	Easterly	1.607	
Athol	1919	Petersham line	Northwesterly	1.496	20,722 11
Athol	1900-1-3	North Attleborough line to Rhode Island line	Northerly	2.479	
Attleboro	1909	Norton line	Southwesterly	2.651	70,199 85
Auburn	1895-7-8-9-1901-3-4	Worcester line to Oxford line	Northwesterly	.738	
Avon	1914	Brockton line to Avon Square.	Southwesterly	5.299	11,896 81
Avon	1920	Randolph line	Northerly	1.310	
Ayer	1912	Littleton line	Southerly	.327	78,143 83
Ayer	1913-14	Shirley line	Southeasterly	.127	
Ayer	1916	Littleton line	Southwesterly	1.498	146,708 43
Barnstable (north)	1909	Yarmouth line	Northwesterly	1.883	
Barnstable (north)	1899-1902-7-10-11	Sandwich line	Westerly	1.912	32,030 95
Barnstable	1918	End of 1916 layout	Easterly	5.490	
Barnstable (south)	1897-1901	Yarmouth line	Westerly	.552	241,620 65
Barnstable, West	1904-5-7	Mashpee line	Easterly	2.263	
Barnstable, West	1916	Mashpee line	Easterly	3.870	22,145 82
Barnstable	1918	Easterly end of 1905 layout	Easterly	.265	
Barnstable	1919	Connecting 1901 and 1918 sections	Easterly	2.184	10,812
Barnstable	1897-9	Ware River to Barre Common	Northwesterly	3.301	
Barre	1919	Petersham line	Southeasterly	2.891	6,906
Barre	1920	$\frac{1}{4}$ mile west of Oakham line	Westerly	3.171	
Becket	1902-4-5-6-8-10-12-13	Chester line to Lee line	Easterly	.324	1,079
Becket	1916	Washington line to Bonney Rigg	Southwesterly	10.812	
Bedford	1897-1902	Lexington	Southwesterly	6.906	22,145 82
Bedford	1903-6	Carlisle Bridge	Southwesterly	1.079	





HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed (Miles).	Construction Expenditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).		
Charlton	1901-2	Charlton Depot to Charlton City	Southerly	1.913	1.913	
Charlton	1905-6	Oxford line to Charlton City	Southwesterly	4.839	4.839	
Charlton	1909-13	Southerly line to Charlton City	Westerly	3.078	3.078	\$139,854 88
Charlton	1919	Connecting 1905 and 1909 sections	—	.546	.200	
Chatham	1899-1901	Depot Street to Harwich line	Westerly	4.038	4.038	46,032 94
Chatham	1907	Depot Street to Harwich line	Northwesterly	3.128	3.128	
Chelmsford	1898-1901	Lowell line to Tyngsborough line	Westerly and northerly	2.433	2.433	
Chelmsford	1903-4	Lowell line toward Chelmsford Center	Southwesterly	1.262	1.262	
Chelmsford	1908-11	Westwood line	Southwesterly	2.512	2.512	96,477 02
Chelmsford	1915	Lowell line to Billerica line	Southerly	.981	.981	
Chelsea	1901-4	Lewis Street to Eastern Avenue	Southwesterly	.959	.959	25,382 66
Cheshire	1899-1900	Lanesborough line to Adams line	Northeasterly	6.670	6.670	103,350 83
Chester	1899-1900	Becket line to Huntington line	Southeasterly	6.616	6.616	74,428 00
Chicopee	1897-8-9	Springfield line	Northerly	.918	.918	
Chicopee	1902-3	Williamansett Bridge	Southerly	3.036	3.036	54,138 18
Chilmark	1905-6	West Tisbury line to Gay Head line	Southwesterly	7.789	7.789	50,290 66
Clarksburg	1905-7-9	North Adams line via Red Mill to Vermont line	—			
Clarksburg	1913	Mountain Road	Northeasterly and northerly	2.754	2.754	21,781 13
Cohasset	1897-8-1900	New Hingham line	Easterly	.122	.122	
Cohasset	1902-3	Beechwood to Scituate line	Southerly	1.733	1.733	16,541 20
Colrain	1898-1901	Shelburne line	Northerly	.547	.547	
Concord	1897-8	Lincoln line	Northwesterly	2.133	2.133	13,443 20
Concord	1900-5-6	Acton line, Great Road	Southwesterly	1.462	1.462	
Concord	1913	Acton line, Harvard Turnpike	Southeasterly	2.128	2.128	48,053 06
Conway	1918	Deerfield line	Westerly	.600	.600	
Cummington	1919-20	Cummington Village	Easterly and westerly	3.074	3.074	69 21
Dalton	1895-6-1903-4	Pittsfield line	Easterly	6.116	6.116	45,142 24
Dalton	1919	Windsor line	Southwesterly	2.557	2.557	40,518 61
Danvers	1915	Ipswich River Bridge on Andover Street	Southwesterly	.314	.100	
Danvers	1919-20	End of 1915 sections	Southwesterly	.691	.691	
Danvers	1920	Peabody line to Andover Street	Southwesterly	1.869	1.100	108,438 29
Dartmouth	1898-9-1900	New Bedford line to Westport line	Northeasterly	.371	.371	
Dartmouth	1898-9-1900	New Bedford line to Westport line	Westerly	4.642	4.735	38,475 87

	1908	.	.	Boston line	Southerly	.028
Dedham	1913-15	.	.	Westwood line	Northeasterly	1.062
Dedham	1914	.	.	Bridge over Charles River	Southerly	1.264
Dedham	1894-5	.	.	South Deerfield to Sunderland Bridge	Southeasterly	1.533
Deerfield	1900-1-2-3-1918	.	.	Cheapside Bridge, Deerfield River	Southerly	1.446
Deerfield	1904-5-6-7-8-9-10-11-13	.	.	Whately line to Deerfield Village	Northerly	4.860
Deerfield	1917	.	.	South Deerfield and Conway line	Northwesterly	3.234
Dennis, South	1895-6-7-8	.	.	Yarmouth line to Brockton line	Northeasterly	4.264
Dennis, North	1900-1-2-4-6	.	.	Base River to Harwich line	Easterly	3.234
Dighton, North	1902	.	.	Taunton line to Rehoboth line	Easterly	1.563
Dighton, South	1905-6-8-9-10-11-12-14	.	.	Taunton line to near Somerset line	Southwesterly to southerly	4.544
Douglas	1902-4	.	.	Sutton line to Manchaug	Southwesterly	1.591
Douglas	1905	.	.	Main Street	Southwesterly	.534
Dover	1905-7	.	.	Charles River	Westerly	2.181
Dracut	1905-6-7	.	.	Near Lowell line on Methuen Road	Northwesterly	1.828
Dracut	1912	.	.	Lowell line, River Road to Methuen line	Northeasterly	3.262
Dracut	1919	.	.	End of 1907 section	Northeasterly	.613
Dudley	1902-4-6-7-16	.	.	Near Webster line to Connecticut	Southwesterly	3.186
Duxbury	1894-5-7-9-1903-5-8-9	.	.	Mansfield line to Kingston line	Southerly	5.159
Duxbury	1914-15	.	.	Pembroke line to Kingston	Southeasterly	3.758
Eastham	1903-4-5-6-9	.	.	Wellfleet line to Orleans line	Southerly	6.460
Easthampton	1895-6	.	.	Northampton line	Southwesterly	1.285
Easthampton	1900-1	.	.	Mount Tom at Clark Street	Northerly	1.098
Easthampton	1913	.	.	Holyoke line to Northampton line	Northwesterly	.355
East Bridgewater	1918	.	.	Whitman line to Bridgewater line	Southerly	3.766
East Brookfield <sup>1</sup>	1898-1900-4	.	.	Brookfield line	Northeasterly	1.339
East Brookfield <sup>1</sup>	1905-7	.	.	Spencer line	Southwesterly	.776
East Brookfield <sup>1</sup>	1920	.	.	Between 1907 and 1904 layout	Northeasterly	.732
East Brookfield <sup>1</sup>	1912	.	.	North Brookfield line	Southeasterly	.744
East Brookfield <sup>1</sup>	1904-6-10	.	.	Springfield line to village	Southeasterly	1.799
Easton	1900	.	.	Brockton line	Southwesterly	.801
Edgartown	1897-9-1900	.	.	Oak Bluffs line	Southerly	2.427
Egremont	1915-20	.	.	New York line	Southwesterly	3.400
Egremont	1917	.	.	Sheffield line	Northerly	2.060
Erving	1898-9-1900-7-9-10-11-13-14	.	.	Orange line to Millers Falls	Northwesterly	8.123
Essex	1902-3	.	.	Essex River	Easterly and westerly	.032
Essex	1912	.	.	Gloucester line	Westerly	1.110
Fairhaven	1894-5-1916	.	.	Mattapoisett line	Westerly	2.093
Farhaven	1917	.	.	Acushnet line	Southerly	1.634
Fall River	1915	.	.	Brightman Street Bridge approach	-	.043
Falmouth	1904	.	.	Bourne line to Woods Hole	Southerly	11.615
Falmouth	1905-6-7-8-9-10	.	.	East Falmouth to Waquoit	Easterly	3.912

Construction expenditures included in Brookfield.



HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length con- structed (Miles).	Construc- tion Ex- penditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).		
Fitchburg	1894-5	Westminster line	Easterly	.973		
Fitchburg	1897	Lunenburg line	Westerly	.605		\$51,198 72
Fitchburg	1900-1-3-4	Ashby line	Southerly	2.540		
Florida	1913	Savoy line	Easterly	.029		134,722 06
Florida	1914	North Adams line	Southeasterly	7.163		
Foxborough	1901-2	Mansfield line	Northerly	1.815		19,537 02
Frammingham	1905-8	Wrentham line	Southeasterly	1.699		
Frammingham	1904-5	Southborough line, Pleasant Street.	Southeasterly	2.432		17,335 26
Franklin	1910	Ashland line, Hollis Street	Northerly	.773		
Franklin	1905-7-10	Bellingham line	Easterly	2.579		29,713 89
Franklin	1911	Wrentham line	Northwesterly	1.184		
Freetown	1902-3	New Bedford line to Lakeville line.	Northerly	3.193		28,255 70
Freetown	1908	Fall River line to Assonet	Northwesterly	.676		
Gardner	1897-8	Temple Street line	Easterly	2.371		
Gardner	1900-1	Westminster	Northwesterly	.985		44,612 63
Gay Head	1913	Chilmark line	Northwesterly	3.134		9,702 98
Gill	1912	Barnardston line to Northfield line.	Easterly	.284		4,522 20
Gloucester	1894-5-8-1905-6-7	Manchester line to "Cut Bridge"	Northerly	3.464		
Gloucester	1907	Rockport line	Southerly	.524		141,829 77
Gloucester	1915-16	Essex line	Easterly	2.762		
Goshen	1894-5-8	Williamsburg line	Northwesterly	2.460		46,440 20
Grafton	1897-9-1903-5-12-13-14-15	Millbury line to Northbridge line	Southerly	6.510		92,568 39
Grafton	1908	Upton line to Grafton Village	Northwesterly	3.068		
Granby	1894-1902-5-6-8	South Hadley line	Easterly	2.260		87,008 07
Granby	1911-12-14	North Street and Belchertown	Easterly and southeasterly	3.203		
Granby	1915	South Hadley line to Amherst line.	Northwesterly	2.034		
Granby	1919	Connecting 1908 section	—	.189		
Great Barrington	1894-6-7-1902	Housatonic River Bridge	Easterly	3.409		
Great Barrington	1916-17	Stockbridge line	Southerly	2.289		153,467 25
Great Barrington	1919	Sheffield line	Northerly	2.096		
Great Barrington	1919	End of 1917 section	Southerly	.909		
Greenfield	1890-1900-2	Washington Street	Easterly	1.421		
Greenfield	1903-6-7-8-10-14	Barnardston line	Southwesterly	3.768		161,210 24
Greenfield	1905	Point on Colrain road	Northerly	.262		
Greenfield	1919	Shelburne line	Southeasterly	2.337		



Groton	1901-2-7	Pepperell line	Southeasterly	1.410	1.410	46,165 05
Groton	1894-1904	Pepperell line	Southwesterly	.105	.105	-
Groton	1919	Littleton line	Northwesterly	3.836	3.836	-
Groveland	1900-1-2-5	Merrimac River Bridge to West Newbury line				
Hadley	1894-1904	Connecticut River to Amherst line	Northeasterly	1.723	1.723	22,613 85
Hamilton	1899-1900-16	Ipswich line	Easterly	4.690	4.690	73,541 83
Hamilton	1909-10	Wenham line	Southwesterly	1.881	1.881	36,438 40
Hancock	1895-6-8-9	Pittsfield line to New York State line	Northeasterly	1.220	1.221	51,981 28
Hanover	1908	Four Corners	Westerly	3.232	3.232	85,517 37
Hanover	1906-8	Pembroke line to Norwell line	Northwesterly	1.285	1.285	6,344 68
Hardwick	1897-1901	New Braintree line	Northerly	4.411	4.411	29,361 41
Harvard	1900-5-10	Boxborough line to Harvard Common	Westerly	.819	.819	33,756 03
Harwich	1899-1900-1-2-3	Dennis line to Chatham line	Easterly	2.316	2.316	52,243 68
Harwich	1908	Chatham line to Brewster line	Northerly	5.098	5.098	83,475 14
Hatfield	1901-6-8-9-10-11	Northampton line to Whately	Northerly	1.379	1.379	-
Haverhill	1902-7-10	Kenoza Road to Merrimac line	Northerly	3.540	3.540	13,495 68
Haverhill	1899	River and Maxwell streets to Methuen line	Easterly	2.657	2.657	27,177 46
Haverhill	1912	North Andover line	Westerly	2.629	2.629	72,235 48
Hingham	1894	Weymouth Back River	Northeasterly	.430	.430	97 10
Hingham	1896-7-1916	Cohasset line	Easterly	1.405	1.420	45,213 45
Hingham	1917	Point on State highway	Westerly	1.286	1.286	22,683 01
Hingham	1919	Weymouth line to Norwell line	Easterly	1.224	1.228	8,142 03
Hinsdale	1901-2-3-20	Dalton line	Southwesterly	3.525	3.525	100,295 65
Holbrook	1894-6-1902	Weymouth line	Southwesterly	1.739	1.739	40,825 11
Holbrook	1917	Braintree line	Southwesterly	.823	.823	25,654 35
Holden	1898-1900-5-8-15	Worcester line to Rutland line	Northerly	6.949	6.949	56,045 43
Hopedale	1906-7-10	Upton line to Milford line	Northwesterly	.316	.316	7,342 74
Holliston	1911-12	Milford line	Easterly	3.314	3.314	-
Holliston	1905-6-10	Ashland line	Northeasterly	1.610	1.610	-
Holyoke	1906-7	Easthampton line	Southerly	4.167	4.167	-
Hudson	1895-6	Brigham Street to Marlborough line	Southerly	1.142	1.142	-
Huntington	1918-20	Russell line	Westerly	1.009	1.009	-
Huntington	1903-6-9-17	Worthington line	Southerly	8.444	5.366	-
Ipswich	1907-8-9	Chester line	Southwesterly	1.640	1.640	-
Ipswich	1910-11	Hamilton line to Ipswich Common	Northerly	2.134	2.134	-
Kingston	1905-6	Rowley line	Southerly	2.287	2.287	-
Kingston	1916	Duxbury line	Southerly	1.016	1.016	-
Kingston	1917	Plymouth line	Southerly	.811	.811	-
Lakeville	1901-2	New Middleborough Avenue	Northwesterly	.712	.712	-
Lakeville	1910-11-12	Freetown line to Berkeley line	Southwesterly	3.570	3.570	-
Lancaster	1902	Clinton line to Sterling	Northwesterly	4.790	4.790	-
			Northerly	1.249	1.249	-

HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed (Miles).	Construction Expenditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).		
Lanesborough	1911-12-13	Cheshire line to Pittsfield line.	Southerly	2.290	2.290	\$68,471 73
Lanesborough	1919	Pratt Brook	Southerly	.990	.050	
Lawrence	1896	Methuen line	Northerly	.267	.267	18,485 36
Lawrence	1915	Southbridge line to Becket line	Southwesterly	.543	.543	
Lee	1894-5-6-1908-9-12-13	Lenox line to Lee Village	Easterly and northeasterly	8.427	8.417	
Lee	1900	Lenox line to Stockbridge line	Southerly	1.259	1.259	167,954 81
Lee	1906	Worcester line to Spencer line <sup>1</sup>	Southerly	1.020	1.020	
Leicester	1894-5-6-8-9	End of 1895 layout to junction with 1896 layout	Westerly	4.819	4.846	77,342 47
Leicester	1920	Lee line to Lenox line (Walker Street)	Westerly	.618	-	
Lenox	1899-1900-1	Pittsfield line to Lenox Village	Northerly	2.282	2.282	
Lenox	1904-5	Lee line to Lenox Village (Kimball Street)	Southerly	3.181	3.181	39,165 93
Leominster	1901-2-15	Sterling line	Northerly	2.200	2.200	
Lexington	1895-6-7-8	Massachusetts Avenue	Northerly	2.549	2.549	31,192 99
Lexington	1900	Bedford line	Westerly	3.446	3.446	
Lexington	1916	Arlington line	Southwesterly	.845	.845	54,916 98
Lexington	1919	End of 1916 section	Northwesterly	.333	.333	
Lincoln	1895-6-7	Lexington line to Concord line	Northwesterly	2.060	2.060	17,392 38
Littleton	1902-3-4	Action line, Great Road	Northerly and westerly	5.256	4.010	
Littleton	1902	Westford line to Great Road	Southwesterly	.337	.337	126,164 25
Littleton	1912-13-18	Ayer line	Southwesterly	3.015	1.632	
Littleton	1920	Easterly end 1912 layout, section 2	Easterly	.220	.220	
Lowell (boulevard)	1897	Tyngsborough line	Easterly	.969	.969	
Lowell (Princeton Street)	1897-8	Chelmsford line	Easterly	1.334	1.334	22,990 33
Lowell	1900	Tewksbury line	Northwesterly	.351	.351	
Lunenburg	1898-9-1900-1-3-10-13	Fitchburg line to Shirley line	Easterly and southeasterly	5.886	5.886	64,195 46
Lynn	1898	Saugus River to Sea Street	Northeasterly	.905	.905	
Lynn	1916	Salem line to Floating Bridge	Southwesterly	.369	.369	193,363 68
Lynn	1914	Lynnfield line	Southwesterly	1.985	1.985	
Lynn	1917	Fox Hill Bridge	Southerly	.403	.403	
Lynnfield	1914	Lynn line	Westerly	.031	.031	18,199 31
Lynnfield	1920	Saugus line to Peabody line	Northerly	1.491	-	
Malden	1918	Melrose line	Southwesterly	.151	.151	6,304 93



Mansfield	1901	Foxborough line	Southeasterly	.720	10,068 19
Mansfield	1906	Norton line	Northerly	.493	
Mansfield	1897-9-1901-2	Marion Village to Mattapoisett line	Westerly	1.855	38,557 65
Marion	1903	Marion Village to Rochester line	Northeasterly	2.134	
Marion	1914	Northerly end of 1897 section	Northerly	1.050	-
Marion	1894-5-1901	Marion Village to Wareham line	Northeasterly	1.579	
Marlborough (east)	1897-1902-3-4	Sudbury line to Hosmer line	Westerly	3.114	
Marlborough (west)	1897-9-1900-1-16	Northborough line	Easterly	2.590	86,318 61
Marlborough	1908-11	Hudson line	Southerly and southwesterly	1.278	
Marshfield	1894-1910	Duxbury line to North River Bridge	Northeasterly	8.277	54,626 51
Mashpee	1911-12-13-14	Falmouth line to Barnstable line	Northeasterly	5.724	70,374 44
Mashpee	1916	Barnstable line (Cotuit Road)	Westerly	2.088	
Mattapoisett	1894-5	Fairhaven line	Easterly	1.162	24,528 57
Mattapoisett	1900-1-3	Marion line	Westerly	2.044	30,974 24
Medford	1907	Somerville line via Mystic Avenue	Northerly	.862	12,230 89
Melrose	1906	Saugus line, Upham Street	Westerly	.395	
Mendon	1917	Malden line to Saugus line	Northerly	.173	
Merrimac	1918	Hopedale line	Southwesterly	.928	-
Merrimac	1897-8-9-1910	Haverhill line	Easterly	1.025	23,486 71
Methuen	1901-3	Amesbury line	Southwesterly	1.206	153,940 98
Methuen	1896-1908	Lawrence line to Haverhill Street	Northeasterly	3.688	
Middleborough	1912-15-16-17	Dracut line to Lawrence line	Northeasterly	4.109	63,281 91
Middleborough	1894-1903	Nemasket River to Rochester line	Southeasterly	8.978	61,728 11
Middleborough	1906-7-8	Bridgewater line to railroad bridge	Southerly	3.465	
Middleton	1912-13-14	North Andover line	Southwesterly	2.655	31,163 99
Milford	1904-5	Hopedale line via West Street	Southwesterly	1.745	
Milford	1909-10	Holliston line	Southwesterly	1.801	28,157 11
Millbury	1902	Worcester line to Grafton line	Southwesterly	.782	-
Millbury	1900-3-4	Worcester line to Main Street	Southerly	1.612	15,573 20
Millville	1899-1900-2-9	Sutton line	Northeasterly	.587	
Milton	1899-1900-17	Uxbridge line to Blackstone line	Southwesterly	1.630	16,302 49
Monson	1894	Neponset River to Granite Bridge	Southwesterly	1.057	52,267 21
Monson	1901-5	Railroad Bridge toward Palmer	Northerly	.934	53,049 14
Monson	1908	Palmer line to Brimfield line	Northeasterly	.394	21,634 66
Montague	1898-9-1904-6-10	Palmer line	Easterly and westerly	.287	
Montague	1905-9	Third Street near L Street, Turners Falls	Easterly	4.052	11,612 71
Nantucket	1894-1903	Connecticut River Bridge	Northeasterly	1.678	
Natick	1901	First Milestone, Stasconset	Easterly	6.479	
Natick	1903	Wellesley line to Lincoln Square	Westerly	1.135	
Needham	1901	Sherborn line to Cemetery Street	Easterly	2.069	
Needham	1905	Newton line	Westerly	.995	
		Charles River Bridge, Chestnut Street	Northerly	1.040	

<sup>1</sup> Exclusive of Leicester Village.



HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed (Miles).	Construction Expenditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).		
New Braintree	1897	Hardwick line to Ware line	Southerly	.174	.174	\$3,944 07
New Braintree	1903	New Braintree Village	Northerly	.223	.223	46 85
New Marlborough	1917	Sheffield line to Connecticut line	Easterly	.230	.230	34,042 79
Newbury	1899-1906	Newburyport line to Rowley line	Southerly to southwesterly	4.231	4.231	
Newburyport	1896-7-8	West Newbury line	Easterly	1.754	1.754	
Newburyport	1918	Newbury line	-	.372	.372	
Newburyport	1913	Bridge Street to River Street	Northerly	.094	.094	34,307 69
Newton	1901	Needham line	Easterly	1.032	1.032	6,836 54
Norfolk	1895	Walpole line to Wrentham line	Southwesterly	1.446	1.446	16,602 60
North Adams	1894-6-7	Williamstown line	Easterly	2.173	2.176	
North Adams	1900-1-2-3	Ashland Street Bridge to Adams line	Southerly	2.319	2.319	95,637 05
North Adams	1913	Florida line	Northerly	3.644	3.644	
North Andover	1900-2-4	Lawrence line	Southeasterly	1.890	1.890	
North Andover	1907-10-11-12	Osgood Park, Pleasant and Court streets, to Haverhill line	Northerly	3.721	3.721	193,997 43
North Andover	1913-14-15	Andover Street to Middleton line	Southeasterly	4.993	4.993	
Northampton	1894	Hadley Bridge	Southwesterly	.569	.569	
Northampton	1918	Williamsburg line	Southeasterly	1.352	1.352	
Northampton	1897-8-9-1900-5	Easthampton line	Northeasterly	1.462	1.462	131,792 92
Northampton	1912	Easthampton line, River Road	Southwesterly	1.440	1.440	
Northampton	1912-15	Hatfield line, Laurel Road	Southerly and southwesterly	2.180	2.180	
North Attleborough	1894-5-6-7-9	Bruce Avenue to Attleboro line	Southwesterly	3.598	3.598	24,168 98
Northborough (east)	1897-8-1911	Marlborough line to Shrewsbury line	Southwesterly	4.937	4.937	44,153 43
Northborough (south)	1897	Westborough line	Northwesterly	.423	.423	
Northbridge	1913-14-15-16	Grafton line	Southerly and southeasterly	3.333	3.343	125,988 32
Northbridge	1919	Uxbridge line	Northerly	1.166	.700	
North Brookfield	1905-6-7-8-10	Brookfield line	Northerly	2.252	2.252	31,295 14
Northfield	1901-2-12	Bernardston line	Northeasterly	3.040	3.040	
Northfield	1912	New Hampshire line	Southerly	1.238	1.238	71,948 83
Northfield	1919	Connecting constructed sections	-	.549	-	
North Reading	1897-8-1901-3-11	Andover line to Reading line	Southerly	2.538	2.538	23,094 12
Norton	1906	Mansfield line	Southerly	.502	.502	
Norton	1916-17	Norton Center	Southerly	2.926	2.926	78,718 90
Norton	1908-9-11	Attleboro line to railroad station	Easterly	4.193	4.193	

Norwell	1919	Hingham to Hanover line	Southeasterly	2. 138	50,234 37
Norwood (south)	1897-9	Walpole line	Northerly	1. 036	19,980 69
Norwood (north)	1895-6	Westwood line	Southerly	1. 087	20,929 85
Oak Bluffs	1894-5-6-1917	Sengekontacket Bridge	Northerly	2. 387	1,715 25
Oakham	1917	Barre line to Rutland line	Southeasterly	2. 792	53,161 38
Orange	1894-5-7	Athol line	Westerly	2. 183	
Orange	1900-1-3-4-5	Erving line	Easterly	2. 612	
Orleans	1900-1-4	Brewster line to Eastham line	Northeasterly	1. 980	20,467 72
Orleans	1903-4-5	Brewster line to Shattuck Corner	Northerly and northwesterly	2. 718	
Oxford	1906-7	Auburn line	Southwesterly	. 849	57,798 31
Oxford	1908-9-20	Charlton line	Northeasterly	2. 252	
Palmer	1913-14-16	Webster line	Northeasterly	2. 275	
Palmer	1905-8	Tennysville to Monson line	Southeasterly to westerly	. 175	
Palmer	1917	Tennysville to Warren line	Easterly	7. 526	130,538 35
Palmer	1906-8-9	Ware line	Southerly	4. 329	
Paxton	1895-1902	Wilbraham line	Easterly	2. 336	48,576 79
Peabody	1920	Worcester line	Northwesterly	3. 597	
Peabody	1920	Andover Street (from Danvers line)	Southeasterly	. 526	77,321 93
Pembroke	1900-1915	Newburyport Turnpike (Lynnfield line to Danvers line)	Northeasterly	2. 712	
Pepperell	1907-10-11-14	Hanover line to Duxbury line	Southerly	4. 345	27,988 16
Petersham	1918	Nashua River Bridge to Townsend line	Northwesterly	3. 578	35,651 83
Petersham	1919	Barre line	Northwesterly	3. 664	147,197 03
Phillipston	1897-1902-4-9	Athol line	Southeasterly	4. 000	31,134 20
Pittsfield	1894-8-1901-2-9-13	Athol line to Templeton	Easterly and northeasterly	2. 755	
Pittsfield	1897-1906-7	Hancock line	Easterly	3. 643	108,192 18
Pittsfield	1904-5	Dalton line	Southwesterly	2. 365	
Pittsfield	1913	Lenox line	Northerly	1. 580	
Plainville	1894-5-1899-1911	Lanesborough line to Dalton Road	Southerly	1. 465	6,075 98
Plymouth	1894-1904-7-10-11	Wrentham line to North Attleborough line	Southerly	2. 293	145,323 65
Princeton	1897-1900-2-3	Wallingsley to Bourne line	Southerly	14. 300	21,948 85
Provincetown	1901-3-20	Princeton Depot	Westerly	2. 230	15,257 05
Provincetown	1916	Truro line to Alberton Street	Northwesterly	1. 102	
Quincy	1899	State highway to Race Point	Southeasterly	. 494	26,587 83
Quincy	1904	Chubbuck Street to Fore River Bridge	Northerly	1. 232	
Quincy	1902-9	Randolph line to Milton line	Northerly	. 949	49,560 90
Randolph	1902-3-9	Braintree line	Northeasterly	1. 900	52,882 99
Randolph	1915	Quincy line	Southeasterly	1. 810	
Raynham	1901-2-3	Avon line	Northwesterly	1. 477	
Raynham	1912-13	Taunton line, Dean Street	Northeasterly	2. 670	
Raynham	1915	Southerly end of Hockanock Swamp	Southerly to southwesterly	1. 506	
Reading	1899-1900-15	Taunton line	Northerly	1. 206	31,010 71
Reading	1902-3	Stoneham line	Northerly	2. 667	
Reading		North Reading line	Southerly		



HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length con- struction structed (Miles).	Construc- tion Ex- penditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).		
Rehoboth	1895-1908	Seekonk line to Dighton line	Easterly	6.034	6.034	\$59,715 93
Rehoboth	1912	Swansea line to Seekonk line	Northwesterly	.512	.512	
Revere	1897-8	Boston line	Northeasterly	.577	.577	
Revere	1899-1913	Saugus line	Southwesterly	1.112	1.113	406,998 10
Revere	1913-16	Point of Pines to parkway	Southerly	3.332	3.335	
Richmond	1897-1907	Railroad station to Pittsfield line	Northerly	4.017	4.017	33,348 45
Rochester	1903	Marion line to Acushnet line	Westerly	5.270	5.270	7,948 43
Rochester	1909	Middleborough line to Wareham line	Southeasterly	.900	.900	
Rockland	1902-5-6	Abington line to Hanover line	Easterly	2.354	2.354	13,515 80
Rockport	1902-6-10	Gloucester line	Northerly	1.600	1.600	21,061 52
Rowley	1905-7-8-9	Newbury line	Southwesterly	2.903	2.903	22,767 50
Rowley	1911	Ipswich line	Northerly	.730	.730	
Russell	1894-5-6-7-8-9	Westfield line to Huntington line	Northeasterly	6.676	6.676	93,959 40
Rutland	1917	Blandford line to Woronoco	Easterly	3.044	3.044	
Rutland	1904	Holden line	Northwesterly	1.160	1.160	
Rutland	1917	Oakham line	Easterly	2.699	2.699	9,734 21
Rutland	1919	Connecting sections constructed	-	1.690	1.690	
Salem	1901-9	Swampscott line	Northeasterly	1.398	1.398	
Salem	1914	Lynn line	Northeasterly	1.912	1.912	71,102 13
Salisbury	1916	Broadway to New Hampshire line	Northerly	2.020	2.020	
Salisbury	1904-5-12	Salisbury Village to Newburyport Bridge	Southerly	1.559	1.560	
Salisbury	1910	New Hampshire line to Village	Southerly	2.410	2.409	97,986 20
Salisbury	1911-12	Amesbury line	Southeasterly	1.742	1.744	
Salisbury	1913-14	Salisbury Square to Salisbury Beach	Southeasterly	2.172	2.170	
Sandwich	1897-8-1900-2-10-12-13-19	Barnstable line to Bourne line	Westerly and northwesterly	7.584	7.599	72,414 96
Sandwich	1914	Mashpee line to Barnstable line	Southeasterly	.114	.114	
Sandwich	1919	Sandwich Village	Southerly	1.818	1.817	
Saugus	1899-1913	Fox Hill Bridge to Revere line	Southwesterly	1.641	1.641	
Saugus	1906-1914	Melrose line to Newburyport Turnpike	Southwesterly	.864	.864	210,386 11
Saugus	1917	Melrose line to Newburyport Turnpike	Northerly	.850	.850	
Saugus	1919	Lynnfield line	Southerly	3.122	3.122	
Savoy	1913	Florida and Savoy at Cold River	Southerly	.045	.045	7,537 04
Savoy	1914	Florida line to Charlemont line	Easterly	1.760	1.765	49,171 58
Scituate	1894-1910	Cohasset line to Mansfield line	Southerly	5.374	5.374	



Seekonk	1900-1-2-4	Rehoboth line to Rhode Island line	Westerly	2,757	2,757	44,326 69
Seekonk	1910-11-13	Perry Avenue to Rehoboth line	Southeasterly	3,272	3,272	4,849 32
Sharon	1908	Foxborough line	Northeasterly	5,638	5,638	78,675 10
Sheffield	1912-13-14-15-17	Connecticut line	Northeasterly to northerly	5,600	5,600	65,481 87
Sheffield	1914-15-18	Connecticut line via Ashley Falls Road	Northerly	3,284	3,284	59,953 34
Shelburne	1919	Great Barrington line	Southerly	2,620	2,620	48,948 67
Shelburne	1894-5-6	Bridge Street to Colrain line	Northeasterly	2,159	2,159	
Shelburne	1916	Bridge Street	Northeasterly	4,424	4,424	
Shelburne	1919	Greenfield line	Westerly and southerly	2,706	2,706	
Shirley	1913-14	Ayer line to Lunenburg line	Westerly	3,618	3,618	
Shrewsbury	1895-1904	Worcester line to Northborough line	Northeasterly	4,854	4,854	
Somerset	1895-1910-14-15	Slades Ferry Bridge	Northerly	5,379	5,379	
Somerset	1903-4-9	Slades Ferry Bridge to Swansea line	Westerly and southerly	2,401	2,401	
Somerset	1909-15	Slades Ferry Bridge, Brayton Avenue	Northeasterly	.286	.286	82,492 97
Somerset	1914-15	Junction of Riverside and Brayton Avenues to Swansea line	Westerly and northwesterly	1,853	1,853	
Somerville	1908	Medford line via Mystic Avenue	Southeasterly	1,160	1,160	50,441 07
Somerville	1914	Junction of Middlesex and Mystic Avenues to Fellsway Boulevard	Northerly	.423	.423	
Southampton	1905-9	Easthampton line	Southerly	.708	.708	13,948 99
Southborough	1902-5	Westborough line	Easterly	1,895	1,895	22,148 17
Southborough	1907	Ashland line	Westerly	.653	.653	
Southborough	1909	Framingham line	Southwesterly	1,143	1,143	
Southbridge	1902	Charlton line	Southwesterly	.909	.909	11,125 21
Southbridge	1907	Sturbridge	Easterly	.448	.448	67,656 97
South Hadley	1895-7-8-9-1900	Granby line to South Hadley Falls	Southwesterly	2,419	2,419	
South Hadley	1902-4-9-12	South Hadley Falls to Granby line	Northeasterly	4,637	4,637	
South Hadley	1915	Amherst line to Granby line	Southerly	.308	.315	
Spencer	1897-1900-1	Leicester line	Westerly	1,600	1,600	45,074 11
Spencer	1906-10-11	Brookfield line to Seven Mile River Bridge	Easterly	1,459	1,459	
Sterling	1897-8-1912	Near Town Hall to West Boylston line	Southerly	2,707	2,707	
Sterling	1905-7-9-14-15	Lancaster line to village	Southwesterly	2,413	2,413	118,310 29
Sterling	1906-7-13-14	Leominster line	Southerly	3,038	5,745	
Stockbridge	1905-9	Lee line, South Lee	Westerly	1,066	1,066	
Stockbridge	1906	Lee line to East Lee	Southwesterly	2,229	2,229	39,321 16
Stockbridge	1917	Great Barrington line	Northerly	.958	.958	
Stoneham	1907-8	South Street	Northerly	.569	.569	14,952 32
Stoneham	1900-1	Reading line	Southerly	1,013	1,013	
Stoughton	1902-3	Canton line to Lincoln Street	Southerly	1,160	1,160	41,891 41
Stoughton	1904-5	Easton line to Walnut Street	Northerly	2,143	2,143	
Stoughton	1914-15	Brookton line to Park Street	Northeasterly to northerly	2,258	2,258	29,404 97
Sturbridge	1897-1903-4-7-9	Sturbridge line	Northwesterly	2,353	2,353	37,053 79
Sudbury	1897-8-1900-1-2-3	Marlborough line to Wayland line	Easterly	5,114	5,114	
Sunderland	1897-1903-4-5-7-9-13-14	Connecticut River Bridge to Amherst line	Southerly	3,971	3,971	51,271 14

HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Continued.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length con- struction Ex- penditures to Dec. 1, 1920.
		From —	Direction.	Length (Miles).	
Sutton	1899-1901-2-20	Millbury line	Southerly	6.075	\$15,405 41
Sutton	1903-4	Douglas line to Manchaug	Northerly	.822	
Swampscott	1897-1900-1	Salem line to Burrill Street	Southwesterly	1.491	
Swansea	1905-6-7-9-10-11-12	Somerset line to Rehoboth line	Northwesterly	6.649	
Taunton	1915-16	Somerset line (Wilbur Avenue to Rhode Island line)	Northwesterly and southeasterly	2.811	48,474 53
	1895-6-8-9-1900-1	Dighton line, Winthrop Street	Easterly	2.933	
	1905-6-13	Dighton line, Somerset Avenue	Northeasterly	1.357	
	1907-13	Berkley line	Northwesterly	2.366	
	1912	Raynham line, Broadway	Southerly	.383	163,138 94
	1914-17	Lakeville line	Westerly	1.477	
	1919	Norton line	Southeasterly	.400	
	1899-1901-2-3	Gardner line at Otter River	Westerly	2.002	
	1905-6-7-8-9	Philipston line to Baldwinville	Northeasterly	3.686	66,662 19
	1900-1-2-3-4-5-6-15	Lowell line to Wilmington line	Southwesterly	6.186	
	1894	Vineyard Haven to West Tisbury line	Southwesterly	1.926	
	1896-1911	Groton line to Ashby line	Westerly	6.034	
	1895-1906-20	Welfleet line via Kelly's Corner	Northwesterly and northerly	10.093	53,716 96
	1895-6	Tyngsborough Bridge to Lowell line	Southeasterly	2.942	
	1909-10-11-12-13	New Hampshire line to Chelmsford line.	Southerly and northwesterly	3.998	
	1918	Grafton	Southeasterly	1.034	
Wareham	1919	Hopedale line	Northwesterly	2.458	62,396 77
	1897-8-1901-3-6-9-10-16	Millville line to village	Northwesterly	3.617	
	1902-14	Northbridge line to Munford River Bridge	Southwesterly	1.198	
	1901-20	Brimfield line	Southwesterly	5.100	
	1894-5-7-1900-12-16	Norfolk line	Northwesterly	3.307	3,993 17
	1897-8-1900-11	Norwood line	Southwesterly	1.970	
	1897-9-1900-3	New Brantree line	Southerly	2.282	
	1909-10-20	Junction of Palmer and Belchertown roads	Northwesterly	4.520	
	1896-1901-6-7-10	Weveantit River Bridge to High Street	Northeasterly	2.195	99,938 56
	1898-1901-3-10-17	Cohasset Narrows Bridge to Wareham Narrows Bridge	Westerly and southwesterly	6.639	
	1905-6-7-8	Parker's Mills to Rochester line	Northwesterly	3.404	
	1919	Parker's Mills	Southerly	.998	



Warren	1896-7-8-1900-7-8	Warren Village to Palmer line	Westerly	2,690
Warren	1899-1900-1	Warren Village to West Brookfield line	Easterly	1,410
Warren	1919	Connecting old sections	-	.840
Washington	1920	Hinsdale line	Southerly	2,107
Watertown	1895-6	Waltham line	Easterly	.850
Wayland	1897-1900-3	Weston line to Sudbury line	Westerly	2,581
Wayland	1920	Section 1 to section 2 of 1900 layout No. 2	Easterly	.279
Webster	1908-12	Lake Street and Thompson's Road to Connecticut line	Southerly	1,772
Webster	1911	Oxford	Southerly	.831
Wellesley	1901	Natick line to Blossom Street	Easterly	1,176
Wellfleet	1903-4-5-7-15	Eastham line to Truro line	Northerly and northwesterly	7,366
Wenham	1897-1901-3	Beverly line to Hamilton line	Northerly	1,762
Westborough	1903-6	Northborough line	Southerly	2,277
Westborough	1897	Northborough line	Southeasterly	.714
West Boylston	1897-8-1913-15	Worcester line to Sterling line	Northerly	4,303
West Bridgewater	1900-1-2-4	Brookton line to Bridgewater line	Southerly	3,161
West Brookfield	1899	Ware line to Ware line	Southeasterly	.151
West Brookfield	1899-1900-1	Brookfield line	Northwesterly	1,506
West Brookfield	1905-13	Warren line	Easterly	1,157
Westfield	1894-6-8-9	West Springfield line	Westerly	2,220
Westfield	1898-9-1900-1-2	Russell line	Easterly	3,584
Westford	1902-12	Littleton line to Chelmsford line	Northerly and southwesterly	4,150
Westford	1903	Minot's Corner to Westford Village	Northerly	.799
Westminster	1894-5-6-7-8-9-1918	Fitchburg line to Gardner line	Southeasterly	5,735
Westminster	1915	Fitchburg line to Ashburnham line	Southwesterly	2,268
West Newbury	1895-6-7-1903-4-5-6-9	Newbury line to Groveland line	Westerly	5,105
Weston	1898-9	Wayland line to Stony Brook	Easterly	3,132
Westport	1894-6-7-8-1903	Dartmouth line to Fall River	Westerly and southeasterly	4,670
West Springfield	1895-6-1905-6-12-13	Westfield line	Easterly	2,704
West Tisbury	1895-6-7-1904	Tisbury line to Chilmark line	Southwesterly	5,358
Westwood	1899-1900-13-16	Norwood line to Dedham line	Northwesterly	1,071
Weymouth	1894	Holbrook line to Abington line	Easterly	.248
Weymouth	1895-6-7	Fore River line to Back River	Easterly	1,780
Weymouth	1903-4-7-8-10	Broad Street via Washington to Abington line	Southerly	4,937
Weymouth	1915	Hingham line	Northwesterly	2,150
Whately	1899-1901-2-3-4-5-6	Deerfield line to Hatfield line	Southerly	4,026
Whitman	1894-5-6	Brookton line	Easterly	1,697
Whitman	1913-14	East Bridgewater line to Abington line	Northerly	2,293
Wilbraham	1894-5-6-1901-3-4-13	Springfield line to Palmer line	Easterly	5,055
Williamsburg	1896-8-1901-3-16	Goshen line	Southeasterly	2,680
Williamstown	1907	River Road from village	Southerly	.133
Williamstown	1895-6-8-1903	North Adams line	Westerly	1,465
Williamstown	1917	Pownal line	Southeasterly	1,197



HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1920 — *Concluded.*

TOWN OR CITY.	Year.	ROADS LAID OUT.			Length constructed (Miles).	Length constructed (Miles).	Construction Expenditures to Dec 1, 1920.
		From —	Direction.				
Wilmington	1907-8-10-11	Tewksbury line to Woburn line	Southerly	.	3.678	3.678	\$37,946 87
Winchendon	1907	Glen Allen Road via Maple Street	Southwesterly	.	1.347	1.347	
Winchendon	1907	Miller's River Bridge, River Street	Southwesterly	.	.352	.352	
Winchendon	1916	Ashburnham line	Northwesterly	.	3.164	3.164	10,045 97
Winchendon	1919	New Hampshire line	Southerly	.	2.493	2.493	
Winchendon	1899-1900	Abington line to Woburn line	Northeasterly	.	1.952	1.952	15,475 81
Winchester	1897-1902-3-6-7-13-15	Cummington line	Westerly	.	4.903	4.903	163,452 74
Windsor	1919	Dalton line	Northeasterly	.	3.563	1.600	
Windsor	1920	Reading line	Southerly	.	1.552	-	
Woburn	1900-1-2	Winchester line to Burlington line	Northwesterly	.	2.033	2.033	
Woburn	1912-13	Wilmington line	Southwesterly	.	.982	.982	69,424 30
Woburn	1915-16-17	Lexington line	Northeasterly	.	2.471	2.471	
Worcester	1896-7	Paxton line	Southwesterly	.	1.356	1.356	
Worcester	1897-1903	Holden line	Southerly	.	1.500	1.500	47,401 85
Worcester	1900-5	West Boylston line	Southerly	.	1.216	1.216	
Wrentham	1897-8-9-1900-2-14	Plainville line to Norfolk line	Northwesterly	.	4.927	4.927	
Wrentham	1912-13	Franklin line	Northeasterly	.	2.041	2.041	97,352 46
Wrentham	1915	Foxborough	Southwesterly	.	2.549	2.549	
Yarmouth, North	1894-5-6	Barnstable line to Dennis	Easterly	.	3.716	3.716	38,156 69
Yarmouth, South	1895-6-7	Barnstable line to Bass River Bridge	Easterly	.	5.082	5.082	

THE NUMBER OF PETITIONS RECEIVED FOR STATE HIGHWAYS AND THE LENGTH PETITIONED FOR, THE LAYOUTS MADE AND THEIR LENGTH AND DISTRIBUTION IN THE VARIOUS COUNTIES OF THE COMMONWEALTH, 1894-1920, INCLUSIVE.

COUNTIES.	PETITIONS RECEIVED.				PETITIONS SITUATED IN —			LAYOUTS MADE IN —			Number of Layouts.
	County.	City.	Town.	Totals.	City.	Town.	Totals.	City.	Town.	Totals.	
Barnstable . . . . .	5	-	59	64	-	16	16	-	17	17	136
Berkshire . . . . .	18	12	63	93	2	31	33	2	23	25	148
Bristol . . . . .	5	8	55	68	3	19	22	3	16	19	129
Dukes . . . . .	3	-	6	9	-	6	6	-	6	6	29
Essex . . . . .	10	28	62	100	8	26	34	10	23	33	172
Franklin . . . . .	2	-	63	65	-	18	18	-	16	16	115
Hampden . . . . .	4	6	36	46	3	17	20	2	13	15	93
Hampshire . . . . .	2	7	55	64	1	18	19	1	16	17	101
Middlesex . . . . .	18	30	115	163	11	46	57	10	40	50	221
Nantucket . . . . .	-	-	1	1	-	1	1	-	1	1	14
Norfolk . . . . .	4	7	76	87	1	26	27	1	24	25	118
Plymouth . . . . .	-	8	72	80	1	27	28	1	21	22	155
Suffolk . . . . .	-	8	2	10	3	1	4	3	-	3	10
Worcester . . . . .	2	9	174	185	3	59	62	3	55	58	312
Totals . . . . .	73	123	839	1,035	36	311	347	36	271	307	1,753

NUMBER OF PETITIONS RECEIVED, ETC. — *Concluded.*

COUNTIES.	Lengths petitioned for (Miles).	LENGTHS LAID OUT.		
		1894-1919.	1920.	TOTALS.
		Miles.	Miles.	Miles.
Barnstable . . . . .	158.37	133.098	2.708	135.806
Berkshire . . . . .	189.69	128.511	5.779	134.290
Bristol . . . . .	174.41	93.761	-	93.761
Dukes . . . . .	29.43	23.021	-	23.021
Essex . . . . .	241.15	105.834	5.845	111.679
Franklin . . . . .	140.48	92.908	-	92.908
Hampden . . . . .	141.84	68.932	4.060	72.992
Hampshire . . . . .	113.74	66.029	7.135	73.164
Middlesex . . . . .	373.09	156.985	9.112	166.097
Nantucket . . . . .	6.47	6.479	-	6.479
Norfolk . . . . .	196.44	78.037	0.327	78.364
Plymouth . . . . .	223.38	135.311	-	135.311
Suffolk . . . . .	14.23	7.376	-	7.376
Worcester . . . . .	403.37	215.512	7.201	222.713
Totals . . . . .	2,406.09	1,311.794	42.167	1,353.961

## CONTRACT PRICES ON STATE

TOWN OR CITY.	Contractor.	EXCAVATION.			CONCRETE MASONRY.		BITUMINOUS SURFACING.			Cement Concrete Surfacing (Cubic Yard).
		Earth (Cubic Yard).	Borrow (Cubic Yard).	Ledge (Cubic Yard).	Plain Concrete Masonry (Cubic Yard).	Reinforced Concrete Masonry (Cubic Yard).	Bituminous Concrete (Ton).	Asphalt (Gallon).	Tar (Gallon).	
Acton and Littleton	Geo. E. Greenough .	\$1 90	\$1 90	\$5 00	\$25 00	-	-	\$0 29	-	-
Agawam . .	Lane Construction Corporation.	1 90	2 00	-	-	-	-	-	\$0 23	-
Andover . .	Geo. T. Seabury, Inc. .	2 45	2 25	8 00	-	-	-	30	-	-
Attleboro . .	Lane Construction Corporation.	2 00	2 00	-	-	-	-	26	-	-
Barre . . .	G. Louis Burnham .	1 19	1 00	4 00	25 00	-	-	-	-	-
Billerica . .	James H. Fannon .	1 75	1 75	6 00	30 00	\$40 00	-	-	-	\$16 00
Canton . . .	Geo. T. Seabury, Inc. .	1 95	1 95	10 00	35 00	40 00	-	26	-	-
Cohasset . .	Wm. A. Jones . .	2 50	2 00	3 00	35 00	-	-	22	-	-
Danvers and Peabody	Hamlin & Nelson .	1 45	1 45	4 00	25 00	31 00	-	27	-	-
Danvers . . .	Welch & Moynihan .	1 90	2 10	1 00	-	-	-	31	-	-
Dracut . . .	Antonio Pallatto .	1 95	2 75	5 00	-	-	-	-	-	-
Dudley . . .	C. Bianchi & Co. .	1 80	1 60	6 50	30 00	45 00	-	-	-	13 75
Eastham and Wellfleet	Thomas & Murphy .	2 00	2 00	-	50 00	-	\$10 93	25	-	-
Egremont . .	Lane Construction Corporation.	2 00	2 50	5 00	30 00	-	-	-	27	-
Holyoke . . .	D. O'Connell's Sons .	2 50	2 00	6 50	25 00	40 00	-	-	22	-
Huntington . .	Cordner & Montague .	1 35	2 00	5 00	20 00	-	-	-	20	-
Kingston . .	Lane Construction Corporation.	2 25	1 50	6 00	30 00	-	-	27	-	-
Leicester . .	John McDonald Construction Company.	1 20	2 00	10 00	15 00	20 00	-	-	-	16 90
Leicester . .	McGuire & McGurty, Inc.	1 45	2 90	-	-	-	-	-	22	12 75
Lexington . .	Hanscom Construction Company.	1 90	2 25	8 00	50 00	-	-	30	-	-
Littleton . .	Framingham Construction and Supply Company.	1 70	2 50	3 00	24 00	-	-	23	-	-
Milford . . .	Cenedella & Co. .	2 00	3 50	6 00	25 00	30 00	-	22	-	-
Oxford . . .	Hassam Paving Company.	1 80	2 00	6 00	25 00	35 00	-	-	25	-
Palmer . . .	C. Bianchi & Co., Inc.	2 25	2 25	-	-	-	-	-	28	17 75
Princeton . .	C. Bianchi & Co., Inc.	2 00	2 75	4 00	35 00	-	-	-	28	-
Salisbury . .	James E. Watkins .	1 90	2 10	5 00	18 00	-	11 75	28	-	-
Saugus, Lynnfield, Peabody and Danvers.	Hassam Paving Company.	1 90	1 90	5 00	25 00	35 00	-	29	-	14 25
Shrewsbury . .	Alex. Palladino . .	1 70	1 85	-	-	-	-	28	-	-
Southwick . .	Lane Construction Corporation.	2 00	2 00	6 00	-	35 00	-	-	23	-
Sterling . . .	Federal Construction Company.	2 25	-	5 00	40 00	-	-	-	-	-
Ware . . . .	Luigi Carchia . .	2 00	2 00	6 00	35 00	35 00	-	-	20	-



## HIGHWAY CONSTRUCTION IN 1920.

BROKEN STONE.		PIPE CULVERTS (LINEAL FOOT).							Fencing (lineal Foot).	Stone Filling (Cubic Yard).	Bounds (Each).	Catch Basins (Each).
Local (Ton).	Trap (Ton).	CLAY.			CORRUGATED IRON.							
		Ten-inch.	Twelve-inch.	Fifteen-inch.	Twelve-inch.	Fourteen-inch.	Sixteen-inch.	Eighteen-inch.				
\$3 80	\$5 60	-	\$2 00	-	-	-	-	-	\$0 80	-	-	\$100 00
-	4 15	-	-	-	-	-	-	\$4 00	-	\$4 75	-	-
-	4 90	\$3 00	3 40	-	-	-	-	-	-	-	\$7 00	100 00
-	4 90	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	\$3 00	-	4 00	-	-	-	-
-	-	-	3 00	-	-	-	-	-	1 00	-	4 00	100 00
-	4 70	-	-	-	\$3 00	-	\$3 50	-	1 00	3 50	-	100 00
-	4 88	-	-	-	2 05	-	2 65	-	-	1 25	-	60 00
3 35	-	1 35	1 50	\$1 70	-	-	-	-	70	-	4 00	-
3 25	-	2 00	-	-	-	-	-	-	1 00	-	-	85 00
3 40	-	-	-	-	-	-	-	-	1 00	-	-	-
-	-	-	-	-	3 00	-	-	-	1 00	-	6 50	-
-	-	-	-	-	5 00	-	-	-	-	-	-	-
-	5 50	-	-	-	2 50	-	-	3 75	95	3 50	5 00	-
-	4 50	-	-	-	3 50	-	-	4 50	80	3 50	-	-
-	4 60	-	2 00	-	2 00	-	-	-	75	3 50	4 00	-
-	5 75	-	-	-	2 50	-	-	-	95	-	5 00	100 00
-	-	-	-	-	1 75	-	-	2 45	1 30	-	20 00	100 00
3 75	-	-	-	-	-	-	-	-	-	1 15	-	100 00
-	4 20	-	-	-	-	-	-	-	1 00	-	-	-
-	5 50	-	2 00	-	-	-	-	-	80	-	-	-
-	4 90	-	3 50	-	-	-	-	-	1 00	-	-	-
-	5 45	-	-	-	4 00	-	-	-	1 00	2 60	5 00	-
-	4 50	-	2 00	-	-	-	-	-	-	-	-	75 00
3 75	-	-	-	-	2 75	-	-	4 00	1 00	2 75	-	-
3 90	-	1 90	-	-	5 00	-	-	-	1 00	-	-	100 00
4 00	-	2 00	2 25	2 65	-	-	-	-	85	-	4 50	100 00
-	3 90	-	-	-	-	-	-	-	-	-	-	-
4 50	-	-	-	-	3 00	-	-	4 50	1 00	3 50	-	-
-	-	-	-	-	-	-	-	-	1 00	-	-	-
-	4 50	-	2 00	-	2 25	-	2 50	3 00	-	2 25	3 00	50 00

## CONTRACT PRICES ON STATE

TOWN OR CITY.	Contractor.	EXCAVATION.			CONCRETE MASONRY.		BITUMINOUS SURFACING.			Cement Concrete Surfacing (Cubic Yard).
		Earth (Cubic Yard).	Borrow (Cubic Yard).	Ledge (Cubic Yard).	Plain Concrete Masonry (Cubic Yard).	Reinforced Concrete Masonry (Cubic Yard).	Bituminous Concrete (Ton).	Asphalt (Gallon).	Tar (Gallon).	
Warwick . .	F. B. Saunders . .	\$1 75	\$1 25	\$10 00	\$18 00	\$26 25	-	-	-	-
Wayland . .	J. H. McCusker . .	1 50	2 00	5 00	-	-	-	\$0 30	-	-
Westfield . .	Lane Construction Corporation.	1 60	1 60	5 00	35 00	-	-	-	\$0 23	-
Westfield . .	Lane Construction Corporation.	1 75	1 75	3 00	-	-	-	-	23	-
West Springfield .	Middlesex Construction Company.	1 50	-	-	40 00	-	-	-	25	\$16 00
Westwood . .	A. J. Mitchell . .	2 00	2 00	5 00	30 00	-	-	22½	-	-

HIGHWAY CONSTRUCTION IN 1920 — *Concluded.*

BROKEN STONE.		PIPE CULVERTS (LINEAL FOOT).								Fencing (Lineal Foot).	Stone Filling (Cubic Yard).	Bounds (Each).	Catch Basins (Each).
Local (Ton).	Trap (Ton).	CLAY.			CORRUGATED IRON.								
		Ten-inch.	Twelve-inch.	Fifteen-inch.	Twelve-inch.	Fourteen-inch.	Sixteen-inch.	Eighteen-inch.					
-	-	-	-	-	\$1 46	\$1 60	-	-	\$0 95	-	-	-	
-	\$4 25	-	-	-	-	-	-	-	85	-	-	-	
\$3 50	-	-	-	-	2 50	-	\$3 50	-	90	\$4 25	-	-	
3 50	-	-	-	-	2 50	-	-	-	-	4 25	-	-	
-	4 25	-	-	-	-	-	-	-	-	-	-	-	
4 45	-	-	-	-	-	-	-	-	90	-	-	\$75 00	



## CARE OF SHADE TREES ON STATE HIGHWAYS.

*List of Towns and Cities in which Work has been done by the State Forester's Department in cleaning and spraying Trees on State Highways for suppressing Gypsy and Brown-tail Moths and Elm-leaf Beetles, and the Amount expended in Each Municipality during the Year.*

TOWN.	Amount.	TOWN.	Amount.
Abington . . . . .	\$105 80	Dracut . . . . .	\$126 74
Acton . . . . .	53 29	Duxbury . . . . .	70 44
Amesbury . . . . .	58 56	East Bridgewater . . . . .	50 00
Andover . . . . .	102 08	Essex . . . . .	28 60
Ashburnham . . . . .	129 00	Falmouth . . . . .	227 71
Ashby . . . . .	19 29	Fitchburg . . . . .	85 78
Ashland . . . . .	77 92	Foxborough . . . . .	130 50
Attleboro . . . . .	67 00	Framingham . . . . .	82 29
Avon . . . . .	13 50	Franklin . . . . .	67 00
Ayer . . . . .	19 15	Freetown . . . . .	121 00
Barnstable . . . . .	274 95	Gloucester . . . . .	73 10
Bedford . . . . .	49 20	Grafton . . . . .	65 60
Bellingham . . . . .	27 00	Groton . . . . .	6 00
Berkley . . . . .	67 00	Groveland . . . . .	74 05
Beverly . . . . .	124 30	Hamilton . . . . .	148 08
Billerica . . . . .	89 94	Hanover . . . . .	75 00
Blackstone . . . . .	22 74	Harvard . . . . .	46 88
Bourne . . . . .	118 12	Harwich . . . . .	100 60
Boxborough . . . . .	37 29	Haverhill . . . . .	176 37
Braintree . . . . .	125 00	Hingham . . . . .	66 59
Brewster . . . . .	92 32	Holbrook . . . . .	59 20
Bridgewater . . . . .	66 05	Holliston . . . . .	99 52
Brockton . . . . .	11 00	Hudson . . . . .	18 04
Burlington . . . . .	119 98	Ipswich . . . . .	64 55
Canton . . . . .	61 80	Lakeville . . . . .	209 58
Chatham . . . . .	59 00	Lancaster . . . . .	24 80
Chelmsford . . . . .	131 07	Leominster . . . . .	55 32
Cohasset . . . . .	24 29	Lexington . . . . .	120 00
Concord . . . . .	30 29	Lincoln . . . . .	30 29
Danvers . . . . .	15 47	Littleton . . . . .	19 15
Dedham . . . . .	50 00	Lowell . . . . .	90 10
Dennis . . . . .	101 80	Lunenburg . . . . .	83 50
Dighton . . . . .	175 00	Mansfield . . . . .	101 98
Dover . . . . .	197 88	Marlborough . . . . .	41 44

*List of Towns and Cities in which Work, etc. — Concluded.*

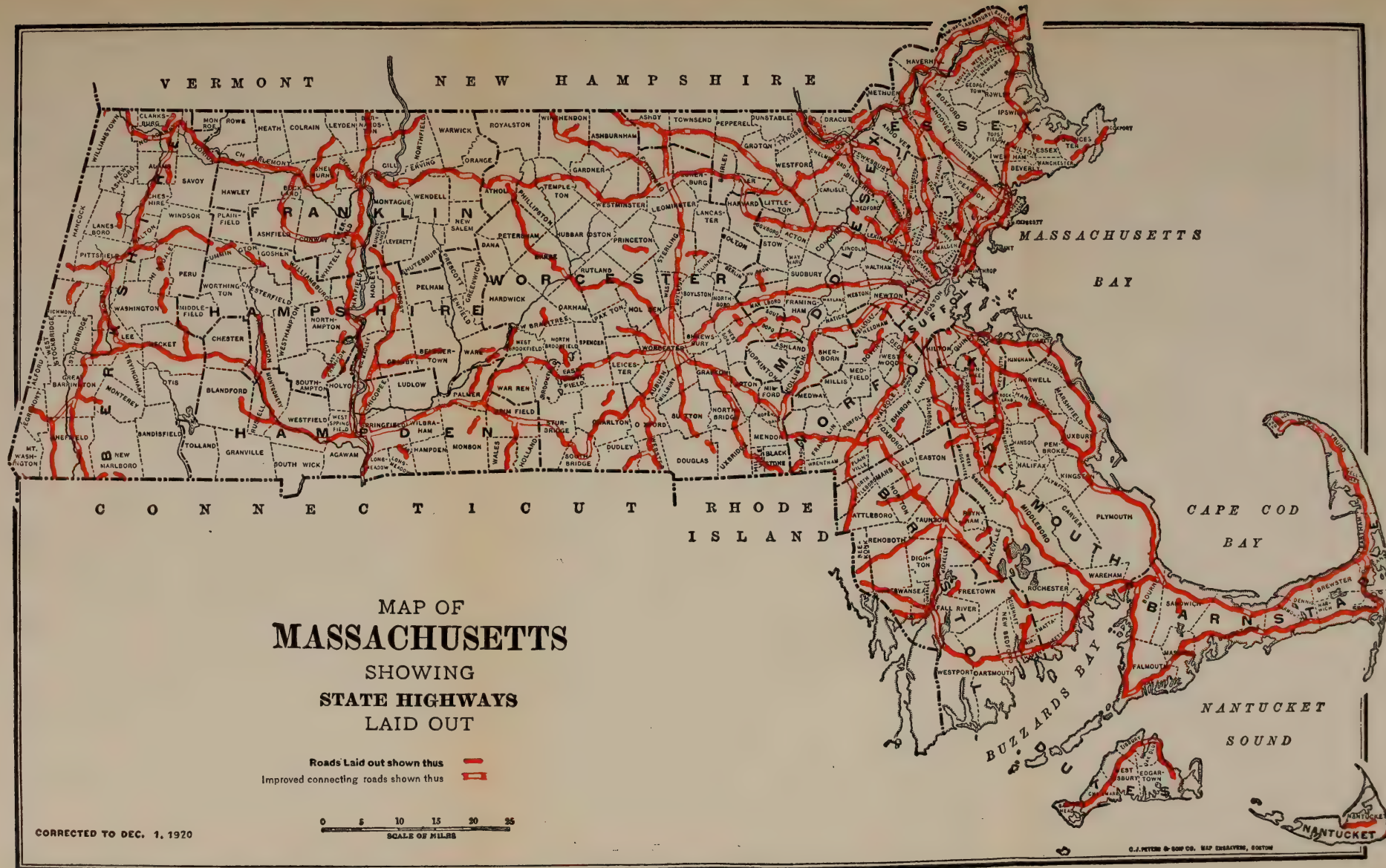
TOWN.	Amount.	TOWN.	Amount.
Marshfield . . . . .	\$162 81	Sheffield . . . . .	\$50 00
Mashpee . . . . .	137 50	Shirley . . . . .	54 25
Melrose . . . . .	62 40	Shrewsbury . . . . .	39 40
Merrimac . . . . .	38 50	Somerset . . . . .	216 00
Methuen . . . . .	127 16	Somerville . . . . .	11 00
Middleborough . . . . .	107 16	Southborough . . . . .	96 47
Middleton . . . . .	16 91	Sterling . . . . .	121 56
Millville . . . . .	22 74	Stoneham . . . . .	101 32
Milton . . . . .	11 00	Stoughton . . . . .	146 00
Natick . . . . .	53 32	Sudbury . . . . .	38 04
Needham . . . . .	95 54	Swansea . . . . .	229 00
Newbury . . . . .	71 01	Taunton . . . . .	134 00
Newburyport . . . . .	39 18	Templeton . . . . .	18 75
Norfolk . . . . .	25 80	Tewksbury . . . . .	130 75
North Andover . . . . .	188 10	Townsend . . . . .	19 29
North Attleborough . . . . .	108 00	Truro . . . . .	105 00
North Reading . . . . .	72 00	Tyngsborough . . . . .	170 75
Northborough . . . . .	242 26	Uxbridge . . . . .	45 47
Norton . . . . .	207 60	Walpole . . . . .	214 00
Norwood . . . . .	95 45	Wareham . . . . .	113 23
Orleans . . . . .	97 65	Wayland . . . . .	59 29
Pembroke . . . . .	109 00	Wellfleet . . . . .	28 20
Pepperell . . . . .	61 79	Wenham . . . . .	129 41
Plainville . . . . .	77 50	West Boylston . . . . .	66 92
Plymouth . . . . .	180 46	West Bridgewater . . . . .	50 50
Princeton . . . . .	6 50	West Newbury . . . . .	143 26
Randolph . . . . .	108 00	Westborough . . . . .	55 79
Raynham . . . . .	54 00	Westford . . . . .	175 40
Reading . . . . .	135 12	Westminster . . . . .	72 61
Rehoboth . . . . .	162 00	Weston . . . . .	39 28
Rochester . . . . .	7 33	Westwood . . . . .	33 97
Rockland . . . . .	71 45	Weymouth . . . . .	221 63
Rockport . . . . .	12 70	Wilmington . . . . .	80 52
Rowley . . . . .	108 13	Winchendon . . . . .	36 75
Salisbury . . . . .	166 59	Winchester . . . . .	73 50
Sandwich . . . . .	85 58	Woburn . . . . .	251 03
Scituate . . . . .	111 87	Wrentham . . . . .	216 00
Seekonk . . . . .	54 00	Yarmouth . . . . .	149 67
Sharon . . . . .	11 00	Total . . . . .	\$13,000 00

STATEMENT OF CLAIMS AGAINST THE DEPARTMENT OF PUBLIC WORKS,  
DIVISION OF HIGHWAYS.

[As required by section 5, chapter 18 of the Revised Laws.]

NAME.	Residence.	Nature of Claim.
Beman, Richard D.	Becket . . .	Damage due to accident alleged to have occurred on State highway in Becket.
Boudreau, William . . .	Wilmington . . .	Damage due to accident alleged to have occurred on State highway in Wilmington.
Bray, Lizzie A. . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Carroll, Mary, and Mary A. Finn.	Northbridge . . .	Damages due to construction of State highway in Northbridge.
Clifford, John A. . . .	Salisbury . . .	Damages due to construction of State highway in Salisbury.
Coleman, John H. . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Farnum, Elizabeth M. . .	Uxbridge . . .	Damages due to construction of State highway in Uxbridge.
Flagg, Lucretia T. . . .	Northampton . . .	Damages due to construction of State highway in Northampton.
Fuller, Reuben H. . . .	Mashpee . . .	Damages due to construction of State highway in Mashpee.
Garr, Craig . . . .	Northbridge . . .	Damages due to construction of State highway in Northbridge.
Goward, Louis B., and Florence E.	Taunton . . .	Damages due to construction of State highway in Taunton.
Haskell, Edith L. . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Ireson, Jennie E. . . .	Wrentham . . .	Damages due to construction of State highway in Wrentham.
Jacques, Rose . . . .	Grafton . . .	Damages due to construction of State highway in Grafton.
Kneisel, Joseph . . . .	Dedham . . .	Damages due to construction of State highway in Dedham.
Lemon, Elizabeth . . . .	Spencer . . .	Damage due to accident alleged to have occurred on State highway in Spencer.
Lemcn, Solomon . . . .	Spencer . . .	Damage due to accident alleged to have occurred on State highway in Spencer.
McGee, John P. . . .	Marlborough . . .	Damages due to construction of State highway in Marlborough.
Moran, James . . . .	West Boylston . . .	Damages due to construction of State highway in West Boylston.
Moran, Mary E. . . .	West Boylston . . .	Damages due to construction of State highway in West Boylston.
Paine, Sarah E. . . .	Revere . . .	Damage due to accident alleged to have occurred on the State highway in Revere.
Parker, Frank C. . . .	Becket . . .	Damage due to accident alleged to have occurred on the State highway in Becket.
Proctor, George W. . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Ray, Foster S. . . .	Charlton . . .	Damages due to construction of State highway in Charlton.
Remington, Mary A. . . .	Great Barrington . . .	Damages due to construction of State highway in Great Barrington.
Roberts, William H. . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Sampson, Frances A. . . .	Plymouth . . .	Damages due to construction of State highway in Plymouth.
Scott, Hugh C. . . .	Norton . . .	Damages due to construction of State highway in Norton.
Snow, Frank E. . . .	Wrentham . . .	Damages due to construction of State highway in Wrentham.
Taft, Kate P. . . .	Northampton . . .	Damages due to construction of State highway in Northampton.
Tribou, E. Harry . . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
Wade, Julia A. . . .	Lee . . .	Damages due to construction of State highway in Lee.
White, Emma A., <i>et al.</i> . . .	Gloucester . . .	Damages due to construction of State highway in Gloucester.
York, Addie A. . . .	Wrentham . . .	Damages due to construction of State highway in Wrentham.









## REGISTRY OF MOTOR VEHICLES.

## MOTOR VEHICLE DEATHS, INJURIES, COLLISIONS.

One of the great questions pressing the American people for solution is how to reduce accidents resulting from motor vehicle collisions.

During the past year in Massachusetts the Registry entered upon a safety campaign, and through its offices the Safe Roads Federation was organized, made up of representatives from various civic bodies throughout the Commonwealth, as well as insurance companies, automobile dealers and allied interests.

As the result of great activity on the part of these organizations, aided by the police and the Registry, the number of persons killed in the Commonwealth during the year 1920 was 102 less than were killed the year before, notwithstanding the fact that there were some 54,000 more automobiles on the highways in 1920 than there were in 1919.

The number of persons injured increased, indicating that while serious accidents were reduced minor accidents increased, and after analyzing these accidents it was determined by the Registry to be necessary to make every person pass an examination before receiving a license to operate motor vehicles. This drastic change in the law will be put into effect Dec. 1, 1920, and it is expected that the result will be a great reduction in minor accidents for the year 1921.

The following tables are a comparison of the accidents in which motor vehicles were involved during the years 1919 and 1920:—



## NUMBER OF PERSONS KILLED AND INJURED.

	KILLED.		INJURED.	
	1919.	1920.	1919.	1920.
Pedestrians . . . . .	379	315	5,719	7,731
Occupants of autos . . . . .	160	114	8,712	11,055
Occupants of carriages . . . . .	1	1	541	344
Motorcycle riders . . . . .	25	28	677	870
Bicycle riders . . . . .	17	12	622	868
Pedestrians near street cars . . . . .	—	10	10	218
Totals . . . . .	582	480	16,281	21,086

## NUMBER OF COLLISIONS.

	1919.	1920.
Autos v. pedestrians . . . . .	6,119	7,118
Autos v. autos . . . . .	11,433	12,297
Autos v. motorcycles . . . . .	10	396
Autos v. bicycles . . . . .	712	850
Autos v. carriages . . . . .	829	639
Autos v. pole, curb, etc. . . . .	1,169	1,338
Autos v. trolleys . . . . .	918	790
Autos v. trains . . . . .	44	39
Totals . . . . .	21,304	23,467
In the daytime . . . . .	17,366	19,105
After dark . . . . .	3,938	4,362
Totals . . . . .	21,304	23,467

## CHILDREN KILLED AND INJURED IN 1920.

Killed, . . . . .	190
Injured, . . . . .	2,101

## LICENSES SUSPENDED AND REVOKED.

The statements following show the action taken by the Registrar and the causes therefor: —

**NUMBER OF LICENSES SUSPENDED AND REVOKED, FISCAL YEARS 1919 AND 1920.**

DATE.	1919.			DATE.	1920.		
	Liquor.	Other Causes.	Total.		Liquor.	Other Causes.	Total.
<b>1918.</b>				<b>1919.</b>			
December . . . . .	52	132	184	December . . . . .	42	80	122
<b>1919.</b>				<b>1920.</b>			
January . . . . .	39	92	131	January . . . . .	28	84	112
February . . . . .	34	90	124	February . . . . .	12	32	44
March . . . . .	26	61	87	March . . . . .	9	31	40
April . . . . .	48	123	171	April . . . . .	31	58	89
May . . . . .	45	274	372	May . . . . .	46	312	427
June . . . . .	53			June . . . . .	69		
July . . . . .	69	188	257	July . . . . .	100	237	337
August . . . . .	38	134	172	August . . . . .	119	231	350
September . . . . .	60	184	244	September . . . . .	134	290	424
October . . . . .	55	187	242	October . . . . .	132	317	449
November . . . . .	35	137	172	November . . . . .	166	384	550
Totals . . . . .	554	1,602	2,156	Totals . . . . .	888	2,056	2,944

**NUMBER OF LICENSES SUSPENDED AND REVOKED ACCORDING TO NATURE OF OFFENCES.**

	1919.	1920.
Recklessness . . . . .	339	406
Liquor . . . . .	554	888
Refusing to stop . . . . .	66	96
Taking car without authority . . . . .	137	70
Improper person . . . . .	186	449
Improper operating . . . . .	223	323
Two overspeedings . . . . .	-	105
Three overspeedings . . . . .	11	11
Deaths . . . . .	506	411
Operating truck or for hire on operator's license . . . . .	-	42
Other offences . . . . .	134	143
Totals . . . . .	2,156	2,944

## INVESTIGATIONS AND PROSECUTIONS BY INSPECTORS.

The following table furnishes a classification and summary of the work of the inspectors other than examination work, together with comparative figures for the preceding year: —

	1919.	1920.
Total reports received from inspectors . . . . .	2,058	1,522
Itemized as follows: —		
Accidents, fatal . . . . .	532	480
Accidents, non-fatal . . . . .	307	316
Accidents, brief reports . . . . .	456	230
General reputation . . . . .	249	223
Miscellaneous . . . . .	296	273
	2,058	1,522
Prosecutions (miscellaneous offences) . . . . .	189	52
Prosecutions (operating with dazzling lights) . . . . .	342	24
	531	76
Fines for miscellaneous offences . . . . .	\$4,810	\$1,753
Fines for dazzling lights . . . . .	2,321	240
	\$7,131	\$1,993

## COMPARISON OF ABSTRACTS OF COURT RECORDS, FISCAL YEARS 1919 AND 1920.

	1919.	1920.
Number of courts that have forwarded abstracts . . . . .	91	94
Number of abstracts received . . . . .	14,212	29,056
<i>Disposition of Cases.</i>		
Persons guilty of operating unlawfully . . . . .	12,372	19,086
Persons not guilty of operating unlawfully . . . . .	492	704
Cases appealed to a higher court . . . . .	825	1,093
Complaints placed on file . . . . .	3,926	5,710
Complaints nol-prossed . . . . .	344	182
Probation . . . . .	201	332
Persons committed to imprisonment . . . . .	439	331
Defendants defaulted . . . . .	14	46



COMPARISON OF ABSTRACTS OF COURT RECORDS, FISCAL YEARS 1919 AND 1920 — *Concluded.*

	1919.	1920.
<i>Offences.</i>		
For overspeeding . . . . .	4,195	6,593
For reckless operating . . . . .	194	192
For operating while intoxicated . . . . .	788	992
For using automobile without authority . . . . .	286	164
For endangering lives and safety of the public . . . . .	357	419
For failing to stop after causing injury . . . . .	139	156
For operating without a license . . . . .	1,657	2,321
For operating without carrying registration certificate . . . . .	667	1,347
For operating an unregistered motor vehicle . . . . .	323	406
For improper display or no register number . . . . .	354	536
For refusing to stop when signaled by officer . . . . .	336	589
For operating with unlighted lamps . . . . .	1,682	1,549
For failing to give signal when approaching intersecting way . . . . .	1,283	3,163
For operating with dazzling lights . . . . .	658	148
For operating within 8 feet of street car . . . . .	300	318
For violating metropolitan park rules . . . . .	236	423
For miscellaneous offences . . . . .	1,141	2,612
For operating after license suspended or revoked . . . . .	36	43
For larceny of motor vehicles . . . . .	339	53
For manslaughter . . . . .	32	34

## FINES PAID, AS REPORTED BY STATE AUDITOR.

	1919.	1920.
For violations of the motor vehicle law . . . . .	\$104,924 94	\$146,453 04

## EXAMINATIONS.

During the past year the number of examining points has been very largely increased. Heretofore examinations were held in only 11 of the larger cities of the Commonwealth. Now they are held in 56 cities and towns. At some of these places examinations are conducted daily, and at other points weekly or fortnightly, according to the season, and as warranted by the number of applications.

The list of examination points follows: —

Athol	Hingham	Norwood
Attleboro	Holyoke	Oak Bluffs
Ayer	Hyannis	Palmer
Boston	Ipswich	Pittsfield
Bridgewater	Lawrence	Plymouth
Brockton	Lowell	Provincetown
Cambridge	Lynn	Quincy
Clinton	Malden	Rockland
Concord	Mansfield	Salem
Fall River	Marlborough	Southbridge
Falmouth	Middleborough	Springfield
Fitchburg	Milford	Taunton
Framingham	Nantucket	Ware
Franklin	New Bedford	Wareham
Gardner	Newburyport	Westfield
Gloucester	Newton (West)	Whitinsville
Great Barrington	North Adams	Woburn
Greenfield	Northampton	Worcester
Haverhill	North Brookfield	

The Inspectors of the Examination and Investigation Section during the year 1920 conducted 39,845 examinations of chauffeurs and private operators. Of the chauffeurs examined, 32,934 passed on the first test and 4,510, or 12 per cent failed. Of the 2,401 operators examined, 403, or 16.7 per cent, were reported as unfit. The total number of "minor operators," or persons between sixteen and eighteen years of age, examined was 1,938. Of these minor operators the percentage of failure in the examination was 15.2 per cent. There were 78 operators having physical infirmity which were examined; 21, or 26.9 per cent, of these were reported unfit. There were also 50 persons examined for the reinstatement of their licenses. It is significant that 24, or 48 per cent, of these failed to pass.

The following table shows a comparison of examinations conducted during the fiscal years 1918, 1919 and 1920: —

	1918.	1919.	1920.
Total examinations . . . . .	17,388	19,107	39,845
Chauffeurs examined . . . . .	17,203	18,882	37,444
Chauffeurs unfit . . . . .	3,386	3,499	4,510
Operators examined . . . . .	185	225	2,401
Operators unfit . . . . .	61	66	403
Physical infirmity . . . . .	—	—	78
Physical infirmity, unfit . . . . .	—	—	21
For reinstatement . . . . .	—	—	50
For reinstatement, unfit . . . . .	—	—	24

#### PERSONNEL OF THE EXAMINING AND INVESTIGATING SECTION.

The personnel of this section has undergone several changes, several new inspectors having been appointed to fill the vacancies occasioned by resignations, and seven new inspectors having been added on account of increased work, so that the total working force of the section now consists of one chief inspector, twenty-nine inspectors and examiners, five stenographers, and eight clerks, — a total of forty-three.

#### USED-CAR SECTION.

The object of this work is to record transactions involving the transfer of ownership of motor vehicles, showing the continuity of ownership of such vehicles, and keeping records in such a way that when a motor vehicle is reported stolen we may watch for its registration by engine number and prevent further fraud.

On account of lack of space it was not possible to put sufficient employees on the work to complete the files, but the same are well advanced so that early in 1921 there will be on file, according to engine number and make of car for each registered motor vehicle, a record. When a motor vehicle is reported stolen a blue card is written and placed in its numerical order in the file so that, together with the four-day notice required before a car is sold, it is very possible to detect and prevent a transfer of a stolen car, as reports of sale and transfer of motor vehicles by either dealers or individuals are checked up daily with the records of stolen cars on file.



*Reports received.*

Reports have been received at this office from 1,626 dealers. Of this number, 805 were dealers holding agents' licenses who made over 700 weekly reports. Of these, 728 dealers held used-car dealers' licenses, and these dealers were required to make daily reports, such reports averaging 150 a day. The reports from individuals averaged 150 a day, such reports being required except when an individual sells to a first-class dealer or agent.

*Stolen Cars and Recovery.*

Over 1,400 cars have been reported as being stolen, many of these reports coming from States other than Massachusetts. One hundred and seventy-five cars were recovered by this office or through information furnished by this office in 1920. In addition, over 50 cars which had been sold on leases or other conditions, and lost track of, were located for dealers and others requesting assistance in tracing property in which they had an interest.

The work of this section, to be fully successful, must have the co-operation of the police departments throughout the State. The Boston police department, in particular, has assisted in every way, so that it is believed that the so-called "fences" for stolen cars are a thing of the past as a result of the law regulating the purchase and sale of motor vehicles, making it incumbent on dealers and others to report both here and to the police.

## REGISTRATIONS, LICENSES, FEES.

During the year 1920 the registration of all classes of motor vehicles increased over that for 1919, and the increase is clearly shown in the following table:—

## AUTOMOBILES, COMMERCIAL VEHICLES AND MOTOR CYCLES.

	1915.	1916.	1917.	1918.	1919.	1920.	Per Cent Increase, Five Years.
Automobiles . . . .	90,580	118,615	145,801	160,486	205,372	251,570	177
Commercial vehicles . .	12,053	18,194	25,505	33,011	41,810	52,968	339
Motor cycles . . . .	9,520	10,713	10,956	12,862	13,698	15,142	59

The fees received for the year 1920, together with the number of vehicles registered in each classification and the number of licenses granted, etc., are shown in the following table: —

## ANALYSIS OF RECEIPTS.

## Certificates of registration:

Automobiles (including 52,968 commercial vehicles) . . . . .	304,658	\$3,025,069	50
Motor cycles . . . . .	15,142	32,675	00
Motor cycle dealers . . . . .	43	410	00
Manufacturers or dealers . . . . .	1,961	48,725	00
Manufacturers or dealers, additional cars . . . . .	2,657	17,194	00
Repairers . . . . .	43	385	00

## Licenses to operate:

Operators . . . . .	75,304 at \$2	00	150,608	00
Chauffeurs . . . . .	30,937 at	2 00	61,874	00
Operators' renewals . . . . .	108,593 at	2 00	217,186	00
Operators' renewals . . . . .	97,798 at	1 00	97,798	00
Chauffeurs' renewals . . . . .	41,185 at	2 00	82,370	00
Chauffeurs' renewals . . . . .	7,722 at	1 00	7,722	00
Additional renewal fees . . . . .	13,500 at	1 00	13,500	00
Examinations . . . . .	42,595 at	2 00	85,190	00
Copies of certificates and licenses furnished . . . . .	14,703 at	50	7,351	50
Duplicate automobile number plates . . . . .	6,831 at	75	5,123	25
Duplicate motor cycle number plates . . . . .	409 at	50	204	50
State plates furnished . . . . .	985 at	10	98	50

Total . . . . .	\$3,853,484	25
Miscellaneous receipts, including interest on deposits . . . . .	6,747	45

Total fees . . . . .	\$3,860,231	70
Motor vehicle fees rebated (deducted), . . . . .	73,236	96

Net fees, . . . . .	\$3,786,994	74
Court fines received by the Treasurer and Receiver-General . . . . .	146,453	04

Total receipts credited motor vehicle fees account, 1920 \$3,933,448 78

The cost of running the Registry of Motor Vehicles for the year 1920 was \$426,819.88, which was 11.27 per cent of the net fees collected, as compared with 11.48 per cent for the year 1919. This cost, deducted from the receipts of the year, left available

for legislative appropriation for highway work the sum of \$3,506,628.15.

The following table gives an analysis of the expenditures for running the Registry for the year 1920:—

EXPENDITURES FOR THE FISCAL YEAR 1920.

Personal services:

Regular payroll . . . . .	\$230,890 05	
Overtime . . . . .	14,485 78	
		<hr/> \$249,375 83

Supplies:

Books, maps, etc. . . . .	\$144 00	
Typewriter repairs and supplies . . . . .	2,404 32	
Adding machine supplies . . . . .	77 75	
Other supplies . . . . .	224 54	
Stationery . . . . .	15,347 50	
Guide cards . . . . .	484 65	
		<hr/> 18,682 76

Equipment:

Typewriter machines . . . . .	\$1,902 70	
Adding machines . . . . .	1,663 00	
Other machines . . . . .	1,557 54	
		<hr/> 5,123 24

Furniture:

Filing cabinets . . . . .	\$321 42	
Electric fans . . . . .	532 80	
Electric wiring . . . . .	330 42	
Miscellaneous . . . . .	543 66	
		<hr/> 1,728 30

Traveling expenses:

Employees . . . . .	\$15,300 65	
Automobiles (owned by employees) . . . . .	14,191 56	
Other traveling expenses . . . . .	1,581 16	
		<hr/> 31,073 37

Other services as listed below:

Expressage . . . . .	\$356 44
Postage . . . . .	30,824 73
Printing . . . . .	26,279 42
Telephone and telegrams . . . . .	83 99
Rent (31 Mount Vernon Street) . . . . .	816 67
Special services (labor and police) . . . . .	1,740 85
Advertising . . . . .	73 75
Badges for inspectors . . . . .	113 50



Other services as listed below — *Concluded.*

Commissions as justices of the peace . . . . .	\$65 00	
Number plates . . . . .	60,396 93	
Sundries . . . . .	63 25	
Towels . . . . .	21 85	
	<hr/>	\$120,836 38
Total . . . . .		\$426,819 88

The total amount available for 1920 was \$427,395.40.

The following comparative statement for the years 1919 and 1920 shows very plainly the increase of work as occasioned by increased registrations and licenses, etc.: —

	1919.	1920.
Automobile registrations . . . . .	203,364	251,570
Highest number plate assigned . . . . .	177,950	219,717
Commercial registrations . . . . .	43,819	52,968
Highest number plate assigned . . . . .	B41,753	B49,572
Motor cycle registrations . . . . .	13,698	15,142
Highest number plate assigned . . . . .	—	14,508
Motor cycle dealers' registrations . . . . .	31	43
Manufacturers' or dealers' registrations . . . . .	2,465	1,961
Licenses to operate:		
Operators . . . . .	63,530	75,304
Chauffeurs . . . . .	15,358	30,937
Operator renewals . . . . .	161,391	206,391
Chauffeur renewals . . . . .	57,689	48,907
Total licenses . . . . .	297,968	361,539
Examinations . . . . .	19,022	42,595
Copies of certificates and licenses issued . . . . .	11,197	14,703
Duplicate automobile number plates . . . . .	5,451	6,831
Duplicate motor cycle number plates . . . . .	488	409
Fees . . . . .	\$2,652,228 90	\$3,853,484 25
Miscellaneous receipts, including interest on deposits . . . . .	15,624 95	6,747 45
Total fees . . . . .	\$2,667,853 85	\$3,860,231 70
Motor vehicle fees rebated (deducted) . . . . .	36,051 50	73,236 96
Net fees . . . . .	\$2,631,802 35	\$3,786,994 74
Court fines received by the Treasurer and Receiver-General . . . . .	104,924 94	146,453 04
Total receipts credited Motor Vehicle Fees Account . . . . .	\$2,736,727 29	\$3,933,448 78
Personal services . . . . .	\$162,358 39	\$249,375 83
Expenses . . . . .	139,921 70	177,444 05



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# The Commonwealth of Massachusetts

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## ANNUAL REPORT

OF THE

## DEPARTMENT OF PUBLIC WORKS

FOR THE

YEAR ENDING NOVEMBER 30, 1920

RELATING TO THE

DIVISION OF WATERWAYS AND PUBLIC LANDS



BOSTON

WRIGHT & POTTER PRINTING CO., STATE PRINTERS  
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APPROVED BY THE  
SUPERVISOR OF ADMINISTRATION.

# The Commonwealth of Massachusetts

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## DEPARTMENT OF PUBLIC WORKS.

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*To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts.*

Pursuant to the provisions of law, I have the honor as Commissioner of Public Works to submit the first annual report of the Department of Public Works for the fiscal year ending Nov. 30, 1920.

The divisions created by law to cover the activities of the Department have been organized in accordance with chapter 350 of the General Acts of 1919, which provided as follows:—

SECTION 111. The Massachusetts highway commission, existing under authority of chapter three hundred and forty-four of the General Acts of nineteen hundred and seventeen and acts in amendment thereof and in addition thereto, and the commission on waterways and public lands existing under authority of chapter two hundred and eighty-eight of the General Acts of nineteen hundred and sixteen, are hereby abolished. All the rights, powers, duties and obligations of said commissions are hereby transferred to and shall hereafter be exercised and performed by the department of public works established by this act, which shall be the lawful successor of said commissions.

SECTION 112. The department of public works shall be under the supervision and control of a commissioner, to be known as commissioner of public works, and four associate commissioners, all of whom shall be appointed by the governor, with the advice and consent of the council. The commissioner shall be appointed for the term of three years. Of the associate commissioners first appointed, two shall be appointed for the term of one year and two for the term of two years. Thereafter as the terms expire the governor shall appoint the commissioner and the associate commissioners for the term of three years, shall fill any vacancy for the unexpired term, and may, with the consent of the council, remove the commissioner or any of the associate commissioners. The commissioner shall receive such annual salary, not exceeding seven thousand five hundred dollars, and the associate commissioners such annual salaries not exceeding six thousand dollars, as the governor and council may determine.

SECTION 113. The department shall be organized in two divisions, namely, a division of highways and a division of waterways and public

lands. The said divisions shall have, exercise and perform, the rights, powers, duties and obligations, respectively, of the Massachusetts highway commission and the commission on waterways and public lands, except as is otherwise provided herein. The governor shall, at the time of making the first appointments under the preceding section, designate two of the associate commissioners to have charge of the division of highways and two to have charge of the division of waterways and public lands. Thereafter, whenever a change in the associate commissioners occurs, the governor may make a new designation. The commissioner shall be entitled to act as a member of both divisions, and when present shall act as chairman of the division. The concurrence of two members shall be necessary in any official act of either division.

SECTION 114. The commissioner shall be the executive and administrative head of the department. He shall approve all contracts made by either division, and may require any of the expenditures of either division to be submitted to him for approval. He may, subject to the civil service law and rules, where they apply, appoint, assign to divisions, transfer and remove such officials and employees as the work of the department may require, and, subject to the provisions of chapter two hundred and twenty-eight of the General Acts of nineteen hundred and eighteen, and the rules and regulations made thereunder, and to the approval of the governor and council where that is required by law, fix the compensation of the said persons.

SECTION 115. The commissioner shall appoint, and may remove, subject to the approval of the governor and council, an official to be known as registrar of motor vehicles, and may, with like approval, fix his compensation. The registrar of motor vehicles shall have, exercise and perform all the rights, powers, duties and obligations of the Massachusetts highway commission relative to motor vehicles and to the operation thereof, as defined by chapter five hundred and thirty-four of the acts of nineteen hundred and nine, and acts in amendment thereof and in addition thereto. Any person aggrieved by a regulation, ruling or decision of said registrar may, within ten days thereafter, appeal from such regulation, ruling or decision to the commissioners of the division of highways who may, after a hearing, order such regulation, ruling or decision to be affirmed, modified or annulled.

SECTION 116. All rules and regulations under provisions of existing law within the jurisdiction of the division of highways, the division of waterways and public lands or the registrar of motor vehicles shall be drafted by the commissioners having charge of said divisions or by said registrar, shall be submitted to the commissioner and associate commissioners sitting as a board, and shall take effect, subject to the provisions of chapter three hundred and seven of the General Acts of nineteen hundred and seventeen, when approved by them, and at such time as they shall designate. Said board shall also have power to make all needful rules and regulations for carrying out the provisions of this act relating to the said department.



Under the terms of the act the following original appointments were made:—

Commissioner of Public Works, for three years, JOHN N. COLE.

*Division of Highways.*

Associate Commissioner, for one year, FRANK D. KEMP.

Associate Commissioner, for two years, JAMES W. SYNAN.

*Division of Waterways and Public Lands.*

Associate Commissioner, for one year, JESSE B. BAXTER.

Associate Commissioner, for two years, RICHARD K. HALE.

In the reorganization, changes in personnel and changes in the work assigned to different employees have resulted in a co-ordination of work that is believed to promise greatly increased efficiency in handling the duties and responsibilities of the Department. In carrying out the work of reorganization the following assignments have been made:—

Executive Secretary for the Department, FREDERICK N. WALES.

*Division of Highways.*

Chief Engineer, ARTHUR W. DEAN.

Construction Engineer, FRANKLIN C. PILLSBURY.

District Engineers:—

District No. 1, Berkshire County, GEORGE A. CURTIS.

District No. 2, Franklin and Hampshire counties, H. D. PHILLIPS.

District No. 3, Hampden and Worcester counties, JOHN A. JOHNSTON.

District No. 4, Middlesex County, F. D. SABIN.

District No. 5, Essex and Suffolk counties, D. H. DICKINSON.

District No. 6, Norfolk and Bristol counties, R. W. COBURN.

District No. 7, Plymouth, Barnstable, Dukes and Nantucket counties,

GEORGE H. DELANO.

Recording Secretary for the Division, MARY A. RILEY.

Financial Secretary for the Division, FRED FAIR.

*Division of Waterways and Public Lands.*

Chief Engineer, FRANK W. HODGDON.

Assistant to the Chief Engineer, for Boston Harbor, JOHN N. FERGUSON.

Assistant to the Chief Engineer, for harbors and waterways outside Boston Harbor, FRANCIS L. SELLEW.

Recording Secretary for the Division, EDNA F. TOWNSEND.

Financial Secretary for the Division, CORA I. ALLEN.

Bridge Engineer for the Department, WILLIAM F. WILLIAMS.

*Registry of Motor Vehicles.*

Registrar, FRANK A. GOODWIN.

Chief Clerk, CHARLES R. GILLEY.

Chief of Inspection Force, ALBERT S. OLSSON.

A detailed report is presented herewith, covering the activities for the year of the Division of Waterways and Public Lands.

JOHN N. COLE,

*Commissioner.*

## DIVISION OF WATERWAYS AND PUBLIC LANDS.

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### BOSTON HARBOR.

#### THE COMMONWEALTH FLATS AT SOUTH BOSTON.

##### *Commonwealth Pier No. 5.*

During the year a considerable amount of repair work has been necessary at this pier. The downspouts have been changed, defects in the roofing remedied, minor alterations made in the heating system and the sashes and steel work repainted.

The downspouts leading from the roof of the head house have given trouble from time to time, and became, during the winter of 1919 and 1920, so defective as to make a change necessary. These downspouts were reconstructed by John Farquhar's Sons, Incorporated, at an expense of \$3,212.

When the heating plant at this pier was installed it was planned so that the heat could be cut off from the passenger accommodations in the central shed if these were not in use. Practically, however, it was found necessary to heat these quarters much of the time to prevent the freezing of the water in the dry valve pits of the sprinkler system. During the year a portion of the records of the Department of Public Works have been moved to rooms in this part of the pier. In order to heat these rooms and the valve pits at all times, and to cut off the passenger quarter when not in use, a new valve has been inserted in the main steam pipe and a smaller pipe run to fit the radiators in the valve pits in the longshoremen's toilets. By this method considerable coal can be saved. As the larger part of the piping required was on hand at the pier, these changes were made at an expense of \$1,251.03.



No general painting has been done at the pier since it was built in 1913. During the year, as in previous years, inspectors and other employees when not needed on their usual work have been occupied in repainting the steel sash and other parts of the steel work. In this way the portions most seriously affected by the weather have been kept painted. At the present time, however, more repainting is required than can be accomplished by such intermittent work. During the coming year the steel work of the pier and the woodwork of the windows and doors of the head house should be repainted.

#### *Commonwealth Pier No. 6.*

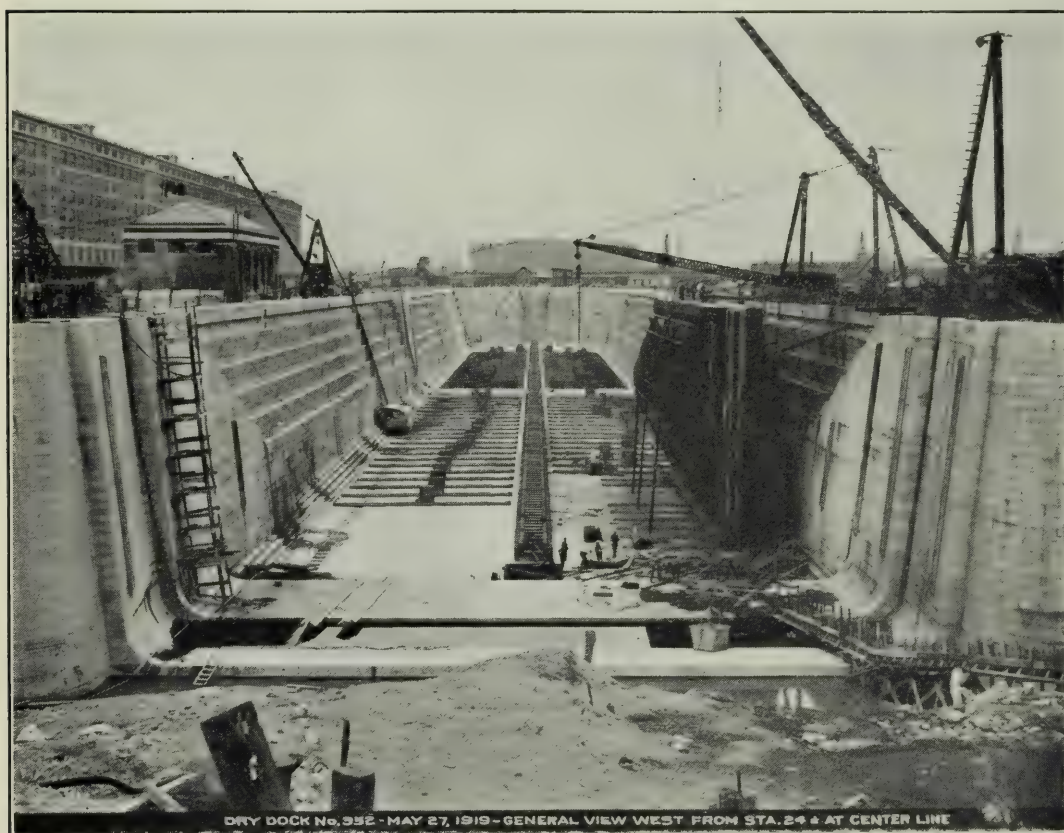
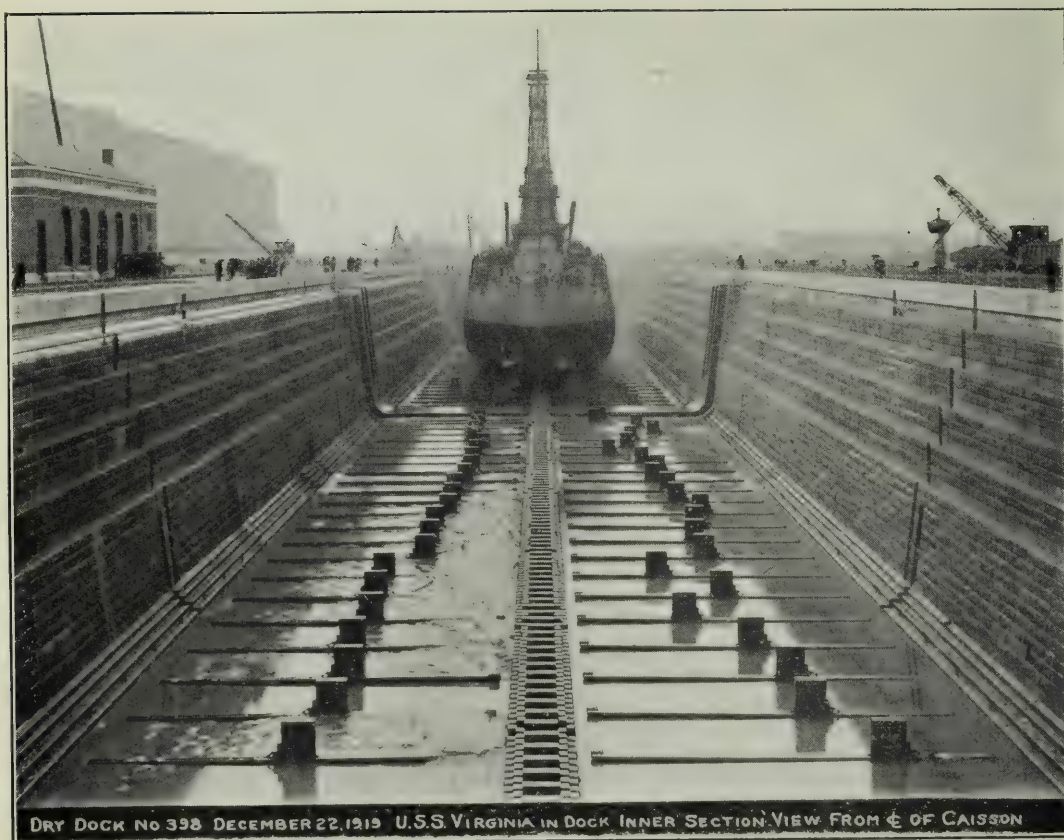
When this pier was built and leased to the Boston Fish Market Corporation, the Commonwealth agreed to relay the paving within five years from the date of completion. The five years ended in October, 1918. At that time, however, the prices for doing such work were very high, and a portion of the paving was in fair condition. It was decided, therefore, with the assent of the corporation, to do only a part of the work and to postpone the remainder for a short time. In accordance with this plan a portion of the wharf frontage opposite the main buildings, and a large part of the central street from Northern Avenue to the southerly end of the main buildings, was repaved in the fall of 1918 and the spring of 1919, at a cost of \$57,163.10.

The remainder of the wharf paving is in such poor condition that the corporation is anxious to have it relaid. A part of the central street also needs attention, although the greater portion of it is in fair condition. The estimated cost of completing this repaving at the present time is \$110,000. A recommendation for an appropriation for this work has been included in those submitted for the Governor's budget.

#### *Dry Dock.*

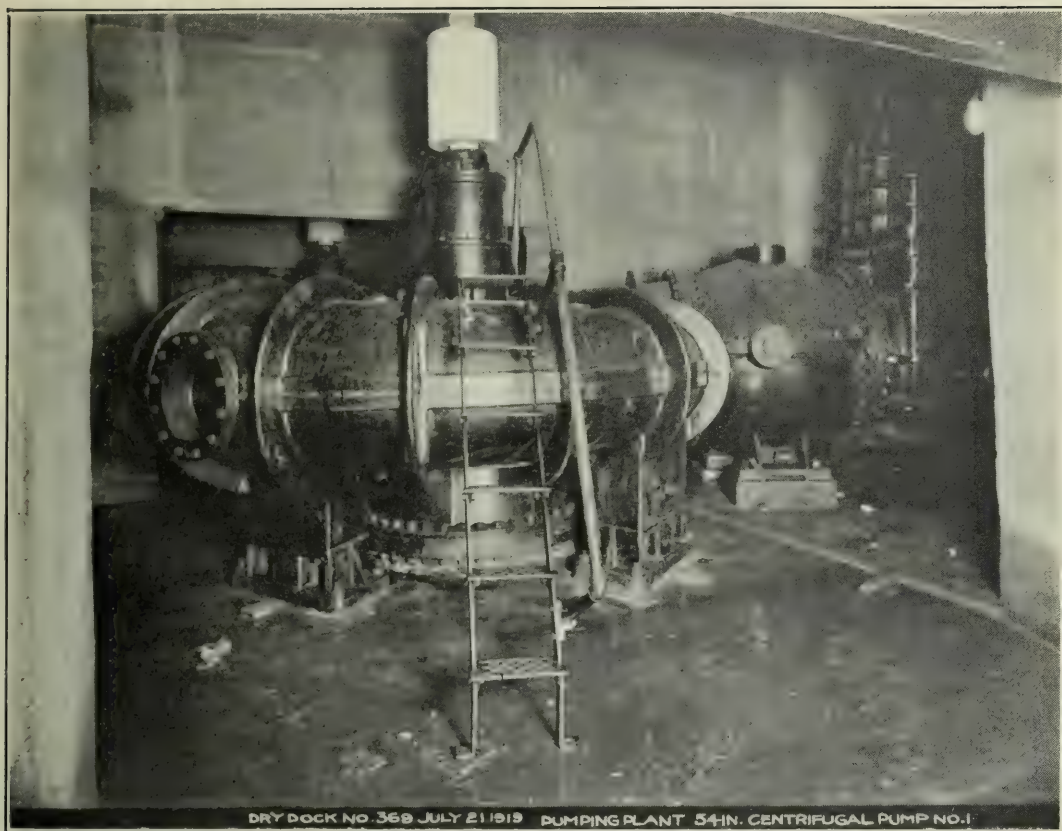
Under date of April 28, 1920, the Commonwealth of Massachusetts, represented by the Department of Public Works, Division of Waterways and Public Lands, gave to the United States of America a deed of a certain parcel of land, together





Commonwealth Dry Dock, Boston.





Commonwealth Dry Dock, Boston.



with a dry dock known as "Commonwealth Dry Dock, Boston," with the buildings and appurtenances in connection therewith, in the city of Boston. For this property, containing 4,396,480 square feet, the United States has paid to the Commonwealth the sum of \$4,158,385.58. Illustrations of this dock are shown herein, and details of its construction and cost are printed in the annual report of the Commission on Waterways and Public Lands for 1919.

*Dry Dock Avenue.*

At the date of the report of the Commission on Waterways and Public Lands for 1919, the paving of Dry Dock Avenue, under an agreement with the Navy Department, was completed, with the exception of a small area where a building obstructed the completion of the sidewalk. During the year the paving has been finished by employees of the Division with material left by the contractor for the purpose.

*Development of Land South of Summer Street.*

During the year sales have been made of land south of Summer Street bordering on C and D streets and on Bullock Street, a new street laid out between C and D streets.

Buildings have been constructed during the year on two of the lots previously sold, one bordering on Bullock Street, the other on D Street.

In making these sales the Commonwealth has undertaken to lay out and construct railroad tracks so that cars can be delivered alongside each of the lots sold. The New York, New Haven & Hartford Railroad Company has agreed to place the cars on these tracks in the required positions without charge other than the freight rate for transporting goods from the point of origin to Boston.

In order to connect a portion of the lots sold during the year with these tracks, about 80 tons of steel rails were purchased, together with the necessary ties, switches and incidental equipment. A contract was made with the J. F. Kennedy Company to lay about 3,310 feet of track and connect the same with the existing tracks.

Under this contract 3,507 feet of track have been laid and eight switches placed. Rails and switches sufficient to build



about 3,000 feet of track remain unused, but for such tracks extra ties would be needed.

During the year an agreement has been made with the city of Boston by which the city agrees to lay out and build D Street from Fargo Street south, and Claflin Street between C and D streets; also lay out and repair the section of Fargo Street between B and C streets. The Commonwealth agreed to lay out and construct Bullock Street from Fargo Street to Claflin Street. Carrying out this agreement the city has already laid out and partially reconstructed Fargo Street between B and C streets, and is preparing the plans for laying out D and Claflin streets. It will not be ready to do any construction work there before next year. In carrying out its part of the agreement, the Division has built a sewer in Bullock Street, from Fargo Street to Claflin Street, and is now engaged in paving the street under contract with the B. E. Grant Company, dated July 19, 1920. It is expected that the work of paving will be completed early in December.

#### *Reserved Channel Bulkhead.*

On July 13, 1921, while filling was being placed back of the bulkhead on the southerly side of the Reserved Channel, a section about 60 feet long broke and a small amount of filling washed out upon the flats between the bulkhead and the Reserved Channel. The William L. Miller Company was employed to repair this break at a price of \$6,974. This work, involving the building of about 100 feet of new bulkhead to close the gap, was completed on Sept. 1, 1920.

Amount expended during the year, \$45,561.30.

Total expenditure to Dec. 1, 1920, \$347,975.15.

#### *Trolley Freight Shed.*

The freight shed built on the South Boston Flats to accommodate the trolley freight business during the war, and used later to load freight into railroad cars, caught fire on Aug. 13, 1920, and was totally consumed except for the floor which was protected by the large quantity of freight in the building. The fire began during the noon hour at the end farthest from

the office, and the building was in flames before the fire department could be of service. The wreckage has been cleared away, but it has not seemed advisable to rebuild the structure.

#### THE COMMONWEALTH FLATS AT EAST BOSTON.

The work of building an extension to the bulkhead, under contract of Sept. 3, 1919, with W. S. Rendle, was completed Dec. 20, 1919, at a cost of \$73,283.24. On Feb. 13, 1920, a contract was made with John R. Burke to place earth filling back of this bulkhead. The contract price for this work was \$22.90 for each and every hour of actual time that the dredge worked. This work was completed on May 28, 1920, at a cost of \$13,224.75.

The dredging and rehandling of material under contract dated March 14, 1916, with the Atlantic, Gulf & Pacific Company, and under various extensions of this contract, was completed Nov. 27, 1920. In all, 8,406,981 cubic yards of material were dredged or rehandled at East Boston or at City Point, South Boston. Of this amount, 4,978,673 cubic yards were used as filling at East Boston, and 3,428,308 cubic yards as filling at South Boston. The total cost of this work was \$1,368,878.72.

If advantage is to be taken of the material constantly being dredged in various portions of the harbor, and use made of such material for filling the Commonwealth flats, a contract similar to the one of March 14, 1916, should be made during the year so that this material may be rehandled and used in filling additional land at East Boston. In connection with this work the docks, slips and channel planned as a part of the improvement can be excavated when the dredge is not fully occupied with the rehandling.

During the latter part of the year the dredge was occupied in excavating what is planned to be the westerly berth of the first large pier to be built at East Boston. This will also form an approach to the wharves at Jeffries Point if the present channel is filled by the extension of the wharves of the Simpson's Patent Dry Dock Company toward the present harbor line.

Studies made during the year for the development of the flats at East Boston show that a change should be made in the harbor lines.



## ANCHORAGE BASIN.

No work has been done in this basin during the year except the repairing of dolphins injured by the striking of vessels. The most westerly dolphin has been carried away so many times that it has been decided not to rebuild it. At present the three remaining dolphins are in good condition.

## BELLE ISLE INLET.

By chapter 10 of the Resolves of 1919 the Commission on Waterways and Public Lands was directed to make a survey of Belle Isle Inlet, in the vicinity of the Boston, Revere Beach & Lynn Railroad, and the State highway at Bennington Street, and to prepare plans and make estimates of the probable cost of constructing dikes and dredging the inlet from the State highway to the bridge across the inlet at Saratoga Street, and depositing the dredged material on the borders of the inlet; also cost of constructing culverts from the embankment of the railroad at Bennington Street.

This survey was made in the spring of 1920. The estimated cost of doing the work is as follows:—

For excavating the channel and depositing the material on the adjoining marshes . . . . .	\$283,000
For building a landing . . . . .	4,000
Culverts:	
Bennington Street . . . . .	26,025
Boston, Revere Beach & Lynn Railroad . . . . .	9,612
	<hr/>
	\$322,637

The cost of doing this work is large, owing to the fact that the ends of the inlet are closed at the present time by embankments and bridges, and it will probably be necessary to build a suction dredge on the spot, as it would be practically impossible to get one in from the harbor.

## HOUGH'S NECK, QUINCY.

The work of building the sea wall under contract of Sept. 18, 1917, with Dennis F. Crowley was completed on June 19, 1920, at a cost of \$17,950.81. The city of Quincy has agreed



to do certain filling back of this sea wall for the construction of a highway.

Amount expended during the year, \$12,677.58.

Total expenditure to Dec. 1, 1920, \$19,999.85.

#### JEFFRIES YACHT CLUB.

Early in 1920 the Jeffries Yacht Club complained that the channel previously dredged to the club landing was shoaling as a result of the escape of material being rehandled at East Boston in connection with the filling there in progress. An examination of the locality showed that a portion at least of this shoaling was due to filling operations in the vicinity.

On June 8, 1920, a contract was made with the Bay State Dredging and Contracting Company to dredge to a depth of 6 feet at mean low water the channel leading to the landing of this club. The contract price for this dredging was 50 cents for each cubic yard, scow measurement. This work was completed on July 31, 1920, at a cost of \$1,728.50.

Amount expended during the year, \$1,961.90.

Total expenditure to Dec. 1, 1920, \$2,961.90.

#### MYSTIC RIVER DREDGING.

In June, 1919, a request was made by the Merrimac Chemical Company for dredging by the Commonwealth of the channel in Mystic River in the vicinity of Malden bridge. The company proposed to excavate at its own expense a berth and basin in order to operate large steamers at its wharf under construction above this bridge. On July 23, 1919, a contribution of \$15,000 was made by the company toward the cost of the work to be undertaken by the Commonwealth.

A contract was made on Dec. 8, 1919, with the Boston Dredging Company to excavate the channel to a depth of 16 feet at mean low water from the main channel below Malden bridge to a point about 1,000 feet above the bridge. The price for this dredging was 50 cents for each cubic yard, scow measurement. The work was completed July 1, 1920, except for a shoal about 30 feet wide over the pipe of the Boston Consolidated Gas Company. This shoal was left in compliance with the request of the gas company that the covering over the

pipe be undisturbed until provision was made for another pipe, so that the gas supply of the city would not be cut off during dredging. As the company could not have this new pipe ready for some time the contractor, upon the completion of the remainder of the work, was relieved of the responsibility for dredging this shoal. The channel will be completed when the new gas pipe is finished and put into operation.

The Beacon Oil Company, on Nov. 12, 1919, requested the Commonwealth to dredge in this river to enable vessels to reach the wharf of the company. The dredging desired included a berth at this wharf and a channel giving an approach to the berth. A contribution of \$50,000 was made by the company to cover cost of dredging the berth and a portion of the approach channel. On Dec. 11, 1919, a contract was made with the Bay State Dredging and Contracting Company for dredging to a depth of 30 feet at mean low water an area in Mystic River near the mouth of Island End River. The contract price for this dredging was 65 cents for each cubic yard, scow measurement. This work was completed March 30, 1920, at a cost of \$73,340.80.

Amount expended during the year, \$133,549.47.

Total expenditure to Dec. 1, 1920, \$397,838.78.

#### ORIENT HEIGHTS DREDGING.

Work under contract of Oct. 3, 1919, with the Gerrish Dredging Company for excavating a channel at Orient Heights and Harbor View was completed Aug. 28, 1920. In connection with this dredging it was found necessary to provide a wooden box culvert to conduct drainage from the area west of Saratoga Street across the flats being filled with material dredged from the channel. The William L. Miller Company was employed to build the culvert, and after the completion of the work to remove the wood work, leaving a clear outlet for the drainage. The cost of the dredging was \$27,169, and of building and removing the wooden culvert, \$6,071.

Amount expended during the year, \$19,719.53.

Total expenditure to Dec. 1, 1920, \$43,090.67.



## WEIR RIVER DREDGING.

The dredging of this river under contract of Sept. 15, 1919, with the Bay State Dredging and Contracting Company, was completed Nov. 27, 1920. The greater part of the work was finished in the spring of the year, but as some shoals were found which could not be removed before the summer excursion boats began their trips, completion was delayed until after the boats stopped running in the fall.

This channel is now not less than 275 feet wide and 12 feet deep from the main harbor channel to the wharf of the Nantasket Beach Steamboat Company at Nantasket. In all, 236,492 cubic yards of material were removed at a cost of \$125,340.76. Toward this cost a contribution of \$25,000 was made by the steamboat company.

Amount expended during the year, \$88,916.97.

Total expenditure to Dec. 1, 1920, \$124,580.10.

## WINTHROP HARBOR DREDGING.

A contract was made on Sept. 10, 1920, with the Bay State Dredging and Contracting Company to excavate a basin in Winthrop Harbor between the United States government landing and the wharf of the Winthrop Yacht Club. The contract price for this dredging was 47.9 cents for each cubic yard, scow measurement. Toward the cost of the work a contribution of \$1,000 has been made by the Winthrop Yacht Club. The work has not been commenced, but is expected to be completed early in the spring.

UNITED STATES HARBOR LINES IN CHELSEA CREEK AND  
MYSTIC RIVER.

In view of the numerous requests for extension of work beyond the established United States harbor lines, the Secretary of War deemed it best to consider a revision of these lines. On March 11, 1920, hearing was held before the Boston Harbor Line Board on the proposal to change these lines in Chelsea Creek and Mystic River. At this hearing various suggestions



were presented to make the pierhead and bulkhead lines coincident.

After hearing all parties and considering all the suggestions, the Harbor Line Board recommended the establishment of new, coincident pierhead and bulkhead lines and they were approved by the Secretary of War July 31, 1920. The changes bring the lines into conformity with proposed improvements, and will be of much assistance in the development of the harbor.

#### HAYWARDS CREEK.

In continuing development at Haywards Creek, the Division, on May 12, 1920, made an agreement with the Bethlehem Shipbuilding Corporation, Ltd., providing for definite co-operation between the Commonwealth and the corporation in making certain improvements. By the terms of this agreement the corporation agreed to build, at its own expense, a floating dry dock with the necessary appurtenances; to construct, at a cost not to exceed \$50,000, a bulkhead and culvert in and across this creek; to do certain dredging and to deposit material in the rear of the bulkhead. In consideration of the value of this work the Commonwealth, on May 12, 1920, deeded to the corporation a parcel of land containing 705,608.7 square feet, including the site for the dry dock and its appurtenances. The leases of March 28, 1917, and Oct. 25, 1917, to the Fore River Shipbuilding Corporation were terminated and a new lease was entered into under date of May 12, 1920.

To hasten this work and provide a berth at the proposed Commonwealth Pier, a contract was made on May 10, 1920, with the Bay State Dredging and Contracting Company for dredging this berth and the channel leading thereto. The material, so far as possible, was to be excavated by a hydraulic dredge and deposited on the flats at the upper end of Haywards Creek near Quincy Adams.

The Massachusetts Oil Refining Company, expecting to use this berth, made a contribution of \$10,000 toward the cost of the work. As the approach channel was to cross certain flats which the Bethlehem Shipbuilding Corporation, Ltd., planned to excavate, that corporation agreed to pay for the portion of

the work within the area which it proposed to dredge. The work was completed on Aug. 13, 1920, when 200,232 cubic yards of material had been dredged at a cost of \$98,773.56. Of this cost the Commonwealth paid \$61,291.36.

Plans for the construction of a State pier in this locality are being prepared, and it is expected that building will be commenced during the coming year. This pier will have track connections with the Fore River Railroad, as well as highway connection. The berth alongside the site of this pier has already been dredged to the depth of 30 feet at mean low water.

RIVERS, HARBORS, TIDEWATERS AND FORESHORES,  
EXCLUSIVE OF BOSTON HARBOR.

By chapter 481 of the Acts of the year 1909 the Board of Harbor and Land Commissioners was authorized and directed to undertake such work for the improvement, development, maintenance and protection of rivers, harbors, tidewaters and foreshores within the Commonwealth as it may deem to be reasonable and proper, and to expend during the years 1910, 1911 and 1912 a sum not exceeding \$300,000, not more than \$100,000 to be expended in any one year, provided, however, that an unexpended balance in any year may be used in the succeeding year. This act provided that the Board shall consider the general public advantage of the proposed work, the local interest therein as manifested by municipal or other contributions therefor, the importance of the industrial or commercial and other interests to be especially served thereby, and any other material considerations affecting the feasibility, necessity or advantage of the proposed work or the expenditure therefor; that no work shall be begun until after a public hearing has been held and a survey and estimate of cost made; that a city or town may appropriate money for the improvement of rivers, harbors, tidewaters and foreshores within its jurisdiction, the money so appropriated to be paid into the State treasury, to be expended by the Board for said purposes; and that the city or town may assume liability for all damages to property suffered by any person by any taking of land, or of any right, interest or easement in land within the city or town made by the Board for the purposes authorized by the act.

The general policy inaugurated by this act has been continued by subsequent legislation in 1912, 1916 and 1919. Chapter 231 of the General Acts of 1919 authorized the expenditure of \$750,000 during the years 1919, 1920 and 1921, not more than \$250,000 to be expended in any one year; provided, however, that an unexpended balance in any one year may be used in the succeeding year.



Petitions under the act of 1909 aforesaid have been filed during the year with the Division for surveys and improvements in the following localities: Acushnet River, New Bedford; Bass River, Yarmouth; Brant Rock, Marshfield; East Bay, Barnstable; Falmouth Inner Harbor, Falmouth; Herring River, Harwich; Katama Bay, Edgartown; Little Good Harbor River, Gloucester; Menamsha Inlet; Pines River, Revere; Point Shirley sea wall, Winthrop; Plymouth Harbor; Scituate Harbor; Stage Cove, Gloucester; Witchmere Harbor, Harwich.

Except for the holding of public hearings, and the making of surveys and estimates of cost in some instances, no conclusive action as to allotments has been taken during the year for carrying into effect improvements under petitions relating to Little Good Harbor River, Gloucester; Menamsha Inlet; Pines River, Revere; Point Shirley sea wall, Winthrop; Plymouth Harbor; and Stage Cove, Gloucester.

For information relating to work accomplished in various harbors and rivers in the Commonwealth not specifically described in this report, attention is called to the annual reports of the Board of Harbor and Land Commissioners and to the annual reports of the Commission on Waterways and Public Lands for the years 1916 to 1919, inclusive, and to the tables in the Appendix which show localities, character of work, appropriations, contributions and expenditures by the Commonwealth and certain appropriations and expenditures by the Federal government.

#### ACUSHNET RIVER.

On April 23, 1920, hearing was held on a petition of the mayor of the city of New Bedford and others for dredging a channel in Acushnet River to a depth of 25 feet at mean low water from the turning basin above Fish Island to a point below Coggeshall Street bridge. A contract was made on Aug. 2, 1920, with the Bay State Dredging and Contracting Company to dredge a channel from the turning basin above Fish Island to a point about 750 feet south of Coggeshall Street bridge in Acushnet River in the city of New Bedford and town of Fairhaven, at the following prices: dredging channel and disposing of the dredged material, including boulders 1 cubic

yard or less in volume, 52 cents per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$16 per cubic yard.

The contract provides that the channel shall be 25 feet deep at mean low water and shall be not over 350 feet wide at the connection with the turning basin, narrowing to a width of 90 feet at a point about 500 feet north of the basin and continuing at this width about 4,200 feet to the northerly limit; provided, however, that the width of the entrance at the turning basin may be reduced at the option of the Division if it is found that the total quantity of material to be removed will exceed 216,000 cubic yards.

Work under this contract is now in progress.

Amount expended during the year, \$75,960.27.

Total expenditure to Dec. 1, 1920, \$75,962.42.

#### BASS RIVER, YARMOUTH.

On April 23, 1920, hearing was held on a petition of the selectmen and others, under chapter 481 of the Acts of 1909, for additional dredging in Bass River in Dennis and Yarmouth. A contract with the Bay State Dredging and Contracting Company was made on June 3, 1920, to do certain dredging at Herring River and Witchmere Harbor, and to redredge the channel at the entrance to Bass River, at the following prices: redredging the channels and disposing of the dredged material, including boulders 1 cubic yard or less in volume, \$1.20 per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$20 per cubic yard.

This work, completed Aug. 3, 1920, comprised the redredging of the channel to a depth of 6 feet at mean low water and a width of 60 feet for a distance of about 1,500 feet inshore from the 6-foot contour at a cost of \$14,404.80.

Amount expended during the year, \$15,086.99.

Total expenditure to Dec. 1, 1920, \$89,104.74.



## BRANT ROCK, MARSHFIELD.

On April 2, 1920, hearing was held on a petition of the selectmen of the town of Marshfield, under chapter 481 of the Acts of 1909, for the protection of the sea wall built by the town south of Brant Rock. A contract was made on Sept. 10, 1920, with William H. Connor to build spur jetties in front of an existing masonry sea wall immediately south of Brant Rock, at the following price: for furnishing materials and building concrete spur jetties including excavation, backfilling trenches, disposal of surplus material, furnishing, erecting and removing forms, and all incidental work, \$21.50 for each cubic yard of concrete measured in place in the completed work.

This work, completed Oct. 25, 1920, comprised the building of seven concrete spur jetties, 50 feet long and 100 feet apart on centers, with a concrete buttress extending to the wall at six of the jetties. The seventh or northerly jetty was built out from a timber bulkhead. The purpose of the jetties is to collect and hold sand in front of the wall to prevent undermining by the sea. The buttresses are intended to help support the wall which showed some evidence of weakness. The total cost of the work under this contract was \$3,332.50.

Amount expended during the year, \$3,138.74.

Total expenditure to Dec. 1, 1920, \$4,104.58.

## COHASSET HARBOR.

In the early summer the attention of the Division was called to certain shoaling which had narrowed the harbor width from 90 feet to a minimum of 30 feet. Under an arrangement with the Bay State Dredging and Contracting Company, the shoals in the outer portion of the channel were removed and a depth of 6 feet at mean low water secured. The work was done at a cost of \$2,210.

## EAST BAY, OSTERVILLE.

On April 2, 1920, hearing was held on the petitions of the selectmen of Barnstable and others, under chapter 481 of the Acts of 1909, for further dredging in East Bay. A contract was made on June 28, 1920, with the Bay State Dredging and Contracting Company for dredging a channel and a basin in



East Bay at the following prices: dredging channel and basin and disposing of the dredged material, including boulders 1 cubic yard or less in volume, 78 cents per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume and disposing of the same, \$20 per cubic yard.

This work, completed Oct. 22, 1920, comprised the dredging of a channel about 2,700 feet long, 75 feet wide and 6 feet deep at mean low water from the 6-foot contour in Nantucket Sound to a basin of the same depth and about 6.5 acres in area in this bay.

Toward the cost of this work a contribution of \$10,000 has been received from individuals interested in the improvement.

Amount expended during the year, \$44,097.21.

Total expenditure to Dec. 1, 1920, \$67,627.

#### ELLISVILLE HARBOR, PLYMOUTH.

The heavy storm of Nov. 6 and 7, 1919, closed the outer end of the channel dredged by the Commonwealth in 1918, and reopened the old channel around the inshore end of the dike built to close it. To repair this damage a contract was made on May 10, 1920, with George A. Finney and P. H. Marsh to redredge the channel through the beach and to build a dike across the outlet on the southeasterly side of the inshore end of the new channel, for the lump sum of \$1,000. This work, completed July 31, 1920, resulted in the restoration of the channel to the dimensions originally dredged, closed the old entrance and made the harbor accessible to small fishing craft at about half tide. The cost of work under this contract was \$1,000.

Amount expended during the year, \$3,888.

Total expenditure to Dec. 1, 1920, \$15,144.82.

#### FALL RIVER HARBOR.

##### *State Pier.*

Reference is made to the report of the Commission on Waterways and Public Lands for the year ending Nov. 30, 1916, setting forth the provisions of chapter 279 of the General Acts of 1915 authorizing the construction of a public pier and other necessary structures and connections on the water front of

Fall River; the various sketch plans, studies and estimates of cost; the votes passed by the former Board of Harbor and Land Commissioners; the license granted to the Old Colony Railroad Company to do certain filling in Fall River Harbor adjoining its Globe freight yard, enabling it to make the necessary railway connections with the proposed pier; and conferences held with the mayor and other officials of Fall River. The city has not as yet purchased the necessary site for the pier.

#### FALMOUTH INNER HARBOR.

On April 2, 1920, hearing was held on the petition of John J. Veeder and others, under chapter 481 of the Acts of 1909, for increasing the anchorage area in this harbor. A contract was made on June 3, 1920, with the Bay State Dredging and Contracting Company for dredging this harbor, at the following prices: dredging and disposing of the dredged material, including boulders 1 cubic yard or less in volume, 58 cents per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$12 per cubic yard.

The work under this contract, completed July 9, 1920, comprised the widening of the upper part of the harbor and its extension northerly about 300 feet to a depth of 6 feet at mean low water, adding about 78,000 square feet to its anchorage area. The cost of this work was \$9,368.74.

Amount expended during the year, \$10,058.

Total expenditure to Dec. 1, 1920, \$81,538.57.

#### GLOUCESTER HARBOR.

Work in progress at the date of the report of the Commission on Waterways and Public Lands for 1919 under contract of July 28, 1919, with the Boston Dredging Company to dredge a channel westerly, northerly and northeasterly from Five Pound Island to a depth of 16 feet at mean low water and to build a pile dolphin opposite a turn in the channel is not yet completed. A portion of the ledge remains to be removed and the pile dolphin is yet to be built.

Amount expended during the year, \$19,010.88.

Total expenditure to Dec. 1, 1920, \$89,767.21.



## HERRING RIVER, HARWICH.

On April 2, 1920, hearing was held on a petition of the selectmen of Harwich, under chapter 481 of the Acts of 1909, for dredging in Herring River. It seemed best to combine the work at this river with that asked for at Bass River and Witchmere Harbor, and a contract was made on June 3, 1920, with the Bay State Dredging and Contracting Company to include the redredging of the channel to this river to a depth of 6 feet at mean low water and to a width not to exceed 50 feet, at the following prices: redredging the channels and disposing of the dredged material, including boulders 1 cubic yard or less in volume, \$1.20 per cubic yard of material, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$20 per cubic yard.

In late October no work at this river had been commenced. It was therefore concluded, in view of the high unit prices under the contract, to relieve the contractor from the necessity for carrying out the work, in the hope that the Division may be able to secure in the coming season a more favorable price for this dredging.

## KATAMA BAY, EDGARTOWN.

On April 21, 1920, hearing was held on a petition of Antone K. Silva and others, under chapter 481 of the Acts of 1909, for a harbor of refuge at Katama Bay by dredging through South Beach. After this hearing an investigation was made by the engineer and an inspection by the Division. It became clear that while the improvement is undoubtedly of value there is considerable uncertainty as to whether the opening will maintain itself after it has been dredged. Under these circumstances arrangements have been made for the dredging to be done by local parties interested in the improvement, at a cost to the Commonwealth of not more than \$2,500.

## LOBSTER COVE, GLOUCESTER.

In June, 1920, the attention of the Division was called to the necessity for dredging in Lobster Cove. It was concluded to combine this work with certain dredging in Newbury-



port Harbor, and on Sept. 1, 1920, a contract was made with the Bay State Dredging and Contracting Company to include the dredging of a basin at the entrance to Lobster Cove, Gloucester, to a depth of 6 feet at mean low water, at the following prices: dredging basin and disposing of the dredged material, including boulders 1 cubic yard or less in volume, 65 cents per cubic yard of excavated material, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$18 per cubic yard.

This work, completed Oct. 2, 1920, comprised the dredging of a portion of a shoal on the easterly side of the entrance to this cove to make a basin about 2 acres in area and 6 feet deep at mean low water.

Amount expended during the year, \$15,443.28.

Total expenditure to Dec. 1, 1920, \$34,547.26.

#### LYNN HARBOR AND SAUGUS RIVER.

The work of dredging basins in Lynn Harbor and Saugus River, in progress at the date of the report of the Commission on Waterways and Public Lands for 1919, under contract with the Bay State Dredging and Contracting Company, was completed Dec. 4, 1919. This work consisted of deepening the basin previously dredged by the Commonwealth at the upper end of the harbor near the Nahant shore to a depth of 8 feet at mean low water, extending this basin to the yacht club floats at the head of the harbor, and dredging a basin in Saugus River in front of the premises of the Point of Pines Yacht Club to a depth of 7 feet at mean low water.

Amount expended during the year, \$1,670.04.

Total expenditure to Dec. 1, 1920, \$128,442.35.

#### NEW BEDFORD STATE PIER.

By chapter 693 of the Acts of 1914 the Board of Harbor and Land Commissioners was authorized to reconstruct and extend the present southerly pier owned by the city of New Bedford, and to reconstruct the pier adjoining the same on the north; to build sheds or other buildings on said piers, and to provide the necessary equipment and appliances for handling freight

and receiving passengers; to fill solid and dredge, and to do such other work as might be necessary to carry out the purposes of the act for the improvement of the harbor and terminal facilities of the city of New Bedford. The appropriation was \$350,000.

The original contract for this pier was made with W. H. Ellis & Son Company Jan. 5, 1915. Attention is called to the annual reports of the Commission on Waterways and Public Lands for 1916, 1917, 1918 and 1919.

The new one-story wooden freight shed and the two-story wooden immigration shed were equipped by the General Fire Extinguisher Company of Providence, R. I., with a dry-pipe system of automatic fire sprinklers at a total cost of \$7,523.51. Additional fire apparatus was also installed consisting of eight sets, 50-foot lengths 1½-inch linen hose and hose racks, and twelve 2½-gallon fire extinguishers.

An office was built in the second story of the immigration shed, plumbing repaired and the heating apparatus rearranged.

One 9,000-pound electrically operated freight elevator was installed, together with steel tower for the same.

On Dec. 5, 1919, the use and occupancy by the New Bedford Storage Warehouse Company for a period of three months of the New Bedford State Pier property was authorized. The results of this arrangement were so satisfactory that this permit has been renewed and is now operative.

The question of leasing the State pier for a term of years has been under consideration by the Division during the year. In accordance with the provisions of chapter 375 of the Acts of 1920 the mayor and aldermen of New Bedford were notified on Oct. 22, 1920, of the decision of the Division to lease this pier. At the request of the city a public hearing was held on this matter in New Bedford on Nov. 10, 1920. No further action has been taken by the Division.

#### NEWBURYPORT HARBOR.

On April 23, 1920, hearing was held with reference to certain dredging in Newburyport Harbor, under chapter 481 of the Acts of 1909, for the purpose of forming a harbor of refuge. The Division was later informed of the purchase by the city



of the dock between Central Wharf and the wharf of the Philadelphia & Reading Coal and Iron Company. It was decided to combine the work requested at Newburyport with that at Lobster Cove, Gloucester, and on Sept. 1, 1920, a contract was made with the Bay State Dredging and Contracting Company to include the dredging of a basin between the Philadelphia & Reading Wharf and Central Wharf in Newburyport to a depth of 6 feet at mean low water, at the following prices: dredging basin and disposing of the dredged material, including boulders one cubic yard or less in volume, \$1.65 per cubic yard of excavated material, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$18 per cubic yard.

After the making of this contract some difficulty was found in securing the necessary releases from the owners of adjacent wharf property in Newburyport and no work has therefore been commenced.

Amount expended during the year, \$9.02.

Total expenditure to Dec. 1, 1920, \$115.97.

#### POPPONESSET BAY AND WEST BAY.

The work of dredging channels in Popponesset Bay and West Bay, in progress at the date of the report of the commission on Waterways and Public Lands for 1919, under contract with John R. Burke, was completed Aug. 3, 1920. This work comprised the dredging of the channel at the entrance to Popponesset Bay and West Bay 100 feet wide and 6 feet deep at mean low water, and the dredging of the natural channel in Popponesset Bay 60 feet wide and 6 feet deep at mean low water to a point on the westerly shore of the upper part of the bay about 800 feet beyond where the channel formerly ended.

Amount expended during the year, \$16,610.78.

Total expenditure to Dec. 1, 1920, \$35,812.19.

#### SCITUATE HARBOR.

On April 2, 1920, hearing was held on a petition of Walter Haynes and others, under chapter 481 of the Acts of 1909, for dredging in Scituate Harbor near the town wharf and anchorage basin. A contract was made on May 24, 1920, with the Bay



State Dredging and Contracting Company for widening the channel opposite the town wharf and enlarging the basins to the north and south of this wharf, at the following prices: dredging channels and basins and disposing of the dredged material, including boulders 1 cubic yard or less in volume, 59.8 cents per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards, and disposing of the same, \$20 per cubic yard.

This work was completed July 20, 1920, and resulted in the addition of about 13,000 square feet to the basin south of the town wharf; about 7,500 square feet to the basin north of the wharf; widening the channel about 30 feet on the curve opposite the south basin; and restoring the depth in the channel to 8 feet at mean low water. The basins were dredged to a depth of 6 feet at mean low water, and a small shoal in the channel to the yacht club pier removed. The cost of this work was \$30,030.95.

Amount expended during the year, \$30,920.16.

Total expenditure to Dec. 1, 1920, \$104,963.92.

#### SCITUATE SEA WALLS, NORTH SCITUATE.

The storm of Nov. 6 and 7, 1919, overturned about 400 feet of masonry wall built by the Commonwealth in 1906 and 1907 at North Scituate. On Feb. 24, 1920, a contract was made with William H. Connor to remove an old masonry wall overturned by the sea; to build in its place a concrete sea wall with spur jetties and filling; and to build spur jetties with a concrete footing course in front of an existing masonry wall, near Beach Street in North Scituate, at the following prices: furnishing materials and building concrete sea wall, spur jetties and footing course, including removal of old masonry wall, excavation, backfilling trenches, disposal of surplus material, furnishing, erecting and removing forms, and all incidental work, \$14 per cubic yard of concrete, measured in place in the completed work; additional material for filling back of wall to required slope between wall and highway, \$2 per cubic yard of additional material furnished in place.

This work was completed Aug. 12, 1920, and resulted in the removal of the masonry wall overturned by the November

storm, the building of 343 linear feet of concrete sea wall, the building of 21 concrete spur jetties, each 15 feet long, and the placing of 936 cubic yards of filling back of the wall. In addition, repairs were made to 185 linear feet of masonry wall immediately north of the new wall. This work comprised a footing course of concrete under the face of the wall to prevent it from being undermined by the action of the sea, the building of 7 concrete spur jetties, each 15 feet long, and the placing of a coping course of concrete to raise the height to that of the adjoining walls. Backfilling was placed to the new top. The total cost of the work was \$14,730.33. A contribution of \$3,500 was made by the county of Plymouth, and an equal amount contributed by the town of Scituate, toward this cost.

Amount expended during the year, \$17,060.75.

Total expenditure to Dec. 1, 1920, \$69,652.61.

#### WAQUOIT BAY, FALMOUTH AND MASHPEE.

The work of repairing the stone breakwater on the easterly side of the entrance to this bay, in progress at the date of the report of the Commission on Waterways and Public Lands for 1919, under contract with E. S. Belden & Sons, Incorporated, was completed June 7, 1920. About 1,386.03 tons of stone were placed, at a total cost of \$6,108.23.

Amount expended during the year, \$9,094.81.

Total expenditure to Dec. 1, 1920, \$31,285.40.

#### WEST BAY, BARNSTABLE.

On April 23, 1920, hearing was held on a petition of Nathan D. Bill and others, under chapter 481 of the Acts of 1909, for dredging in West Bay. A contract was made on July 1, 1920, with the Bay State Dredging and Contracting Company to dredge a channel not more than 50 feet wide on the bottom and 6 feet deep at mean low water to follow generally the existing channel from the 6-foot contour above the entrance between the jetties to the 6-foot contour about 1,400 feet below the drawbridge to Little Island, at the following prices: dredging channel and disposing of the dredged material, including boulders 1 cubic yard or less in volume, 78 cents per cubic yard of material, scow measurement; excavating boulders in excess of 1



cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$20 per cubic yard.

Toward the cost of this work a contribution of \$10,000 has been made by individuals interested in the improvement.

Work under this contract is now in progress.

Amount expended during the year, \$8,798.13.

Total expenditure to Dec. 1, 1920, \$59,244.47.

#### WESTFIELD RIVER.

The work of extending two of the stone jetties built by the Commonwealth in this river, near the old county bridge, was completed during the year. The second jetty upstream from the bridge was lengthened about 25 feet, and the fourth jetty, 15 feet. The object of this work is to deflect the current to prevent further erosion of the westerly bank of the river below the bridge.

Amount expended during the year \$1,296.90.

Total expenditure to Dec. 1, 1920, \$6,037.29.

#### WITCHMERE HARBOR.

On April 2, 1920, hearing was held on a petition of the selectmen of Harwich, under chapter 481 of the Acts of 1909, for dredging an entrance to Witchmere Harbor. It was decided to combine this work with that asked for at Bass River and Herring River, and a contract was made on June 3, 1920, with the Bay State Dredging and Contracting Company to include the redredging of the channel to this harbor to a depth of 6 feet at mean low water and a width not to exceed 50 feet, at the following prices: redredging channel and disposing of the dredged material, including boulders 1 cubic yard or less in volume, \$1.20 per cubic yard, scow measurement; excavating boulders in excess of 1 cubic yard and not greater than 5 cubic yards in volume, and disposing of the same, \$20 per cubic yard.

In late October no work at this harbor had been commenced. It was therefore concluded, in view of the high unit prices under the contract, to relieve the contractor from the necessity of carrying out the work in the hope that the Division may be able to secure in the coming season a more favorable price for this dredging.



## MISCELLANEOUS MATTERS.

## GREAT PONDS.

Jurisdiction over great ponds belonging to the Commonwealth, these ponds containing in their natural state 10 or more acres of land, was conferred upon the former Board of Harbor and Land Commissioners by chapter 318 of the Acts of 1888, and further authority given that Board by chapter 379 of the Acts of 1904, to sell and convey or lease any of the islands owned by the State in the great ponds, subject to the approval of the Governor and Council.

During the year the Division has made examinations, held conferences or taken other proceedings relative to Asnaconcomet Pond, Hubbardston; Lake Winthrop, Holliston; Lake Whalom, Lunenburg; Long Pond, Brewster and Harwich; Morey's Hole Pond, Plymouth; Morse Pond, Wellesley; Tisbury Great Pond, Tisbury; White Island Pond, Plymouth.

A list of the lakes and ponds of the State with areas of 10 or more acres, given by counties, is printed in the report of the Commission on Waterways and Public Lands on "Water Resources of Massachusetts, 1918."

CONSERVING AND EQUALIZING THE FLOW OF WATER IN RIVERS  
AND STREAMS.

By chapter 87 of the Resolves of 1918 a special commission on the water resources of the Commonwealth of Massachusetts was created, including in its membership the chairman of the Commission on Waterways and Public Lands, to investigate the water resources of the Commonwealth, and their report was printed as Senate Document No. 298 of 1919.

By chapter 359, Acts of 1909, chapter 564, Acts of 1912, and chapter 84, Resolves of 1917, co-operation was established between the Commonwealth and the Water Resources Branch of the United States Geological Survey, whereby data relating to the gauging of streams within the Commonwealth and other work of a similar character carried on by the said survey have

been obtained for use by the Division, said data being available for other departments of the Commonwealth.

The latest data, being a summary of Stream Flow Records for various periods ending Sept. 30, 1920, are printed on pages 78-95 of this report.

#### STATE BOUNDARIES.

Chapter 1 of the Revised Laws, section 4, requires that the Board of Harbor and Land Commissioners shall in the year 1905, and every fifth year thereafter, examine and inspect all the monuments or other marks defining the location of the boundary lines of the Commonwealth, and if any of them have been injured, displaced, removed or lost said Commissioners shall, in co-operation with persons duly authorized by the adjoining State, restore them or replace them with suitable stone monuments, and in the same manner set suitable stone monuments at points not properly marked where the State boundary is intersected by the boundary of any counties, cities or towns in the Commonwealth or by a highway or railroad. By chapter 225, Acts of 1920, a sum not exceeding \$3,000 was made available for services and expenses in the inspection of State boundary monuments.

The perambulation of the boundary line between Massachusetts and Rhode Island was made conjointly with Everett A. Kingsley, representing Rhode Island, and was commenced Sept. 15 and finished Sept. 29, 1920. All the marks were visited on the dates given in the tables,<sup>1</sup> and found to be in good condition and properly set, with certain exceptions.<sup>1</sup>

The perambulation of the boundary line between Massachusetts and Connecticut was made conjointly with Henry R. Buck, representing Connecticut, and was commenced July 19 and finished Aug. 7, 1920. All the marks were visited on the dates given in the tables,<sup>1</sup> and found to be in good condition and properly set, with a certain exception.<sup>1</sup>

The perambulation of the boundary line between Massachusetts and New York was made conjointly with Homer C. Kline, representing New York, and was commenced Oct. 6 and finished Oct. 23, 1920. All the marks were visited on the dates given

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<sup>1</sup> Not printed. In the files of the Department.



in the tables,<sup>1</sup> and found to be in good condition and properly set, with certain exceptions.<sup>1</sup>

The perambulation of the boundary line between Massachusetts and Vermont was made conjointly with Herbert M. McIntosh, representing Vermont, and was commenced Aug. 16 and finished Aug. 21, 1920. All the marks were visited on the dates given in the tables,<sup>1</sup> and found to be in good condition and properly set, with certain exceptions.<sup>1</sup>

The perambulation of the boundary line between Massachusetts and New Hampshire was made conjointly with M. C. Knapp, representing New Hampshire, and was commenced Aug. 23 and finished Sept. 3, 1920. All the marks were visited on the dates given in the tables,<sup>1</sup> and found to be in good condition and properly set, with a certain exception.<sup>1</sup>

#### PROVINCE LANDS.

The territory known as the Province Lands in Provincetown, belonging to the Commonwealth, over which the Board of Harbor and Land Commissioners was given general care and supervision by the provisions of chapter 470 of the Acts of 1893, comprises about 3,290 acres lying northerly and westerly of the line described in that act.

Reclamation work on these lands was commenced in 1894, and under the direction of a superintendent has been carried on in each succeeding year. Two methods are used to prevent movement of the sand. The barren dunes are first covered with brush or planted with beach grass. The grass is pulled in bunches about 2 inches thick for transplanting in rows about 4 feet apart and 6 inches deep, and so transplanted lives between four and five years. This work is followed and reinforced by the transplanting of trees and shrubs.

During the year work on these lands has been continued in accordance with these methods. In the winter and fall of this year 20 acres of sand dunes were covered with brush. In the spring 5 acres of bayberry were transplanted and in the early summer 93,000 pines. The work of destroying gypsy-moth clusters was continued so vigorously that very little damage was done by the moths upon these lands this year.

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<sup>1</sup> Not printed. In the files of the Department.



The parking area of 8,000 square feet, for the use of automobiles, built in 1919 at the end of the drive, on the bluff overlooking the ocean, received a coating of gravel screenings in June and a covering of road tar in the fall. This area is now in excellent condition for use.

The sum of \$183.20 has been paid into the State treasury during the year, being the amount received from licenses issued to various parties to cultivate and pick cranberries on the bogs, and to mow meadowlands.

Amount expended during the year, \$4,238.69.

Total expenditure to Dec. 1, 1920, \$85,129.97.

#### MASSACHUSETTS ATLAS SHEETS AND TOWN BOUNDARY ATLASES.

Under authority of chapter 57, Resolves of 1890, chapter 42, Resolves of 1891, chapter 360, Acts of 1900, and chapter 69, Resolves of 1915, 3,396 atlas sheets of the map of the Commonwealth and 4 town boundary atlases have been sold during the year, for which \$498.70 was received and forwarded to the Treasurer and Receiver-General.

No atlases were delivered during the year under the authority of chapter 360, Acts of 1900, as amended by chapter 484, Acts of 1909.

#### RE-ESTABLISHMENT OF CERTAIN TRIANGULATION POINTS.

By chapter 223 of the General Acts of 1915 the Board of Harbor and Land Commissioners was authorized to make such surveys and do such other work as may be required by any order of the Land Court; to re-establish and permanently mark certain stations previously established in connection with the topographical survey of the Commonwealth and the town boundary survey, which have been lost or destroyed; and to obtain the geographical position of such new points and stations as may be required from time to time by the court. The Board was allowed to expend not exceeding \$1,000 from the sum of \$1,500 which may be annually paid out of the State treasury.

During the year the location of the following triangulation stations was determined and permanently marked on the ground, and their geographical positions furnished to the Land Court: 5 stations in Peabody and Salem; 3 stations in Wayland and Sudbury; 18 stations in Nantucket. The following triangulation stations were marked with a composition plate bolted to ledges known as: "Park Ledge" in Peabody, and "Walbach and Rice Ledge" in Sudbury.

Further details of those stations are in the files of the Division.  
Amount expended during the year, \$1,000.

Total expenditure to Dec. 1, 1920, \$5,708.19.

#### LICENSES GRANTED DURING THE YEAR.

Nos.

1. Petition of the city of Boston, by its commissioner of Public Works, for license to repair and strengthen Warren bridge on Charles River, Boston. Granted Dec. 8, 1919.
2. Petition of the Ace High Chocolate Company for license to construct foundations for a building in and over Fort Point Channel, Boston. Granted Dec. 8, 1919.
3. Petition of the Haverhill Electric Company for license to lay a submarine cable in Merrimack River, northerly of the Haverhill-Groveland bridge, in Haverhill and Groveland. Granted Dec. 8, 1919.
4. Petition of Frank P. Knight and George L. Knight for license to build a portion of a building over Manchester Harbor near Central Street, Manchester. Granted Dec. 26, 1919.
5. Petition of the Edison Electric Illuminating Company of Boston for license to lay three cables in Neponset River at the temporary Neponset bridge, so called, Boston and Quincy. Granted Dec. 29, 1919.
6. Petition of the Newburyport Gas and Electric Company for license to lay and maintain lines for the transmission of electricity over Glen Mills Creek, a tributary of Parker River, Newbury. Granted Dec. 29, 1919.
7. Petition of the P. S. Huckins Company for license to build a pile and timber structure and a marine railway in Boston Harbor at East Boston. Granted Dec. 29, 1919.
8. Petition of the Merrimac Chemical Company for license to build a pile trestle on Mystic River, Everett. Granted Jan. 9, 1920.
9. Petition of the Merrimac Chemical Company for license to build pile and timber bulkheads and sod dikes, fill solid, and maintain



Nos.

- filling already done, in Mystic River, Everett. Granted Jan. 9, 1920.
10. Petition of the Edison Electric Illuminating Company of Boston and the Weymouth Light and Power Company for license to lay cables in Weymouth Fore River at and near Weymouth Fore River bridge, Quincy and Weymouth. Granted Jan. 23, 1920.
  11. Petition of the city of Boston, by its commissioner of public works, for license to build sea walls and pile platforms, to rebuild portions of the existing wall, to drive fender piles and dredge in Roxbury Canal, Boston. Granted Jan. 26, 1920.
  12. Petition of the United States Rubber Company, American Plant, for license to drive piles in Broad Canal, Cambridge, for the foundation of a portion of a transformer and switch house. Granted Jan. 26, 1920.
  13. Petition of the county commissioners of Hampden County for approval of plans for the construction of a bridge across Connecticut River in Springfield and West Springfield, as authorized by chapter 252 of the General Acts of 1915. Granted Jan. 29, 1920.
  14. Petition of the Charles River Amusement Company for license to build and maintain temporarily, for mooring purposes, four pile dolphins in Fort Point Channel, Boston. Granted Feb. 9, 1920.
  15. Petition of the Beacon Oil Company for license to build a pile wharf and pile dolphins in Mystic River, Everett. Granted Feb. 20, 1920.
  16. Petition of the Cohasset Narrows Bridge Commission for approval of plans for the construction of a new bridge across Cohasset Narrows in Wareham and Bourne, as authorized by chapter 165 of the General Acts of 1918. Granted Feb. 20, 1920.
  17. Petition of the city of Beverly for license to fill solid and build a stone culvert at and near West Federal Street and Bass River Street in Bass River, Beverly. Granted Feb. 20, 1920.
  18. Petition of the Newburyport Gas and Electric Company for license to build a pile platform and four pile dolphins on Merrimack River, Newburyport. Granted Feb. 20, 1920.
  19. Petition of the town of Harwich, by its board of selectmen, for license to build a reinforced concrete culvert at the head of Allens Harbor, Harwich. Granted Feb. 20, 1920.
  20. Petition of the Boston Molasses Company for license to fill solid in Boston Harbor near the Reserved Channel at South Boston. Granted March 3, 1920.
  21. Petition of Thomas Taggart for license to build a pile pier and float stage in Hyannis Harbor at Hyannisport, Barnstable. Granted March 9, 1920.
  22. Petition of the Marine Biological Laboratory for license to build a pile platform and float stage in Eel Pond at Woods Hole, Falmouth. Granted March 9, 1920.
  23. Petition of the Merrimac Chemical Company for license to build a



Nos.

- bulkhead and pile trestle and fill solid on Mystic River, Everett. Granted March 9, 1920.
24. Petition of Daisy M. Headley for license to build a foot bridge, on piles, with a draw therein, across Little Bay between the mainland and Nantucket Island, Fairhaven. Granted March 22, 1920.
25. Petition of the Simpson's Patent Dry Dock Company for license to build a pile wharf, to remove two existing piers and to dredge in Boston Harbor at East Boston. Granted March 26, 1920.
26. Petition of the New England Oil Refining Company for license to build a pile wharf, a pile trestle and four pile dolphins in Taunton River, Fall River. Granted March 26, 1920.
27. Petition of Elizabeth W. Baxter for license to build a wharf in Lewis Bay at Hyannis, Barnstable. Granted March 26, 1920.
28. Petition of the Boston Molasses Company for license to fill solid in tidewater at and near the junction of Farragut Road and East First Street and near the Reserved Channel at South Boston. Granted April 2, 1920.
29. Petition of Mary T. Shumway, Ethel N. Shumway and Harold H. Shumway, heirs of Nelson Shumway, for license to build a pile and timber bulkhead and fill solid on Fort Point Channel, Boston. Granted April 2, 1920.
30. Petition of the county commissioners of Dukes County for approval of plans for the construction of a bridge over the outlet of Lagoon Pond in Oak Bluffs and Tisbury, as authorized by chapter 89 of the Acts of 1920. Granted April 2, 1920.
31. Petition of the New Bedford Gas and Edison Light Company for license to extend its wharf on Acushnet River, New Bedford, by building sea walls and filling solid. Granted April 5, 1920.
32. Petition of the Beacon Oil Company for license to build a portion of a pump house, to fill solid, lay a suction pipe and construct a wooden strainer box on Island End River, Everett. Granted April 5, 1920.
33. Petition of the Quincy Market Cold Storage and Warehouse Company for license to build and maintain a pile structure in Boston Harbor in and over a part of a dock at Constitution Wharf, Boston. Granted April 23, 1920.
34. Petition of the Boston & Albany Railroad, the New York Central Railroad Company, lessee, for license to modify the location of the fender lines for the 70-foot width of channel in connection with the construction of a new bridge across Chelsea Creek, Boston and Chelsea, and to construct dolphins. Granted April 23, 1920.
35. Petition of the Bethlehem Shipbuilding Corporation, Ltd., for license to fill solid in Bents Creek at its Fore River Plant, Quincy. Granted April 23, 1920.
36. Petition of Thomas E. Reed for license to build a pile structure in Gloucester Harbor, Gloucester. Granted May 10, 1920.

Nos.

37. Petition of the Richard T. Green Company for license to build a pile wharf and bulkhead and dredge in Chelsea Creek, Chelsea. Granted May 10, 1920.
38. Petition of the American Printing Company for license to build a sea wall, extend a sewer and fill solid in a dock in Fall River Harbor, Fall River. Granted May 10, 1920.
39. Petition of Edith M. Kingsbury for license to build a marine railway, pile wharf and dike, to construct dolphins, fill solid and dredge in Neponset River, Quincy. Granted May 11, 1920.
40. Petition of the Bethlehem Shipbuilding Corporation, Ltd., for license to build a floating dry dock, including a culvert, bulkhead, mooring pier and marginal wharf, to fill solid and dredge in Haywards Creek and Weymouth Fore River, in Quincy, Weymouth and Braintree. Granted May 12, 1920.
41. Petition of the Norton Company for license to locate two float stages in Lake Quinsigamond, Worcester. Granted May 17, 1920.
43. Petition of Henry A. Morss for license to build a wharf, locate a float stage and place riprap in Marblehead Harbor at Marblehead Neck, Marblehead. Granted May 21, 1920.
44. Petition of the Fall River Electric Light Company for license to build a pile pier and five pile dolphins in Taunton River, Fall River. Granted June 28, 1920.
45. Petition of the Western Union Telegraph Company of New York for license to lay approximately 1,000 feet of submarine cable in Mystic River near the Boston & Maine Railroad drawbridge No. 8, Somerville and Medford. Granted May 25, 1920.
46. Petition of Beryl Keith Kane for license to build a wharf, supported by stone piers, in Marion Harbor, Marion. Granted May 28, 1920.
47. Petition of James M. Codman for license to build a pile wharf and locate a float stage in Buzzards Bay, Wareham. Granted June 1, 1920.
48. Petition of George T. Rice, John K. Burgess and Philip Spalding, trustees of the Tisbury Pond Club, for license to excavate a ditch connecting Long Cove and Tisbury Great Pond, West Tisbury. Granted June 4, 1920.
49. Petition of the United Electric Light Company for license to construct a new concrete intake, to replace the present intake, beyond the river line established by chapter 301 of the Acts of 1893, on Connecticut River, Springfield. Granted June 4, 1920.
50. Petition of the Standard Oil Company of New York, New England Department, for license to remove a portion of an existing wall, to build a new wall and wooden platform, to drive fender piles, to fill solid and to dredge in Chelsea Creek, East Boston. Granted June 4, 1920.
51. Petition of the Massachusetts Oil Refining Company for license to build a temporary pile pier and dolphins in Haywards Creek, Braintree. Granted June 21, 1920.



Nos.

52. Petition of the Pocahontas Fuel Company, Incorporated, for license to drive piles within the lines of its present wharf in Acushnet River, New Bedford. Granted June 21, 1920.
53. Petition of the Beacon Oil Company for license to build an addition to its wharf, on piles, to construct a pile dolphin and drive additional piles at its present wharf on Mystic River, Everett. Granted June 21, 1920.
54. Petition of the Winthrop Highlands Association for license to build a pile pier, wooden steps and a diving platform in Broad Sound, Winthrop. Granted June 23, 1920.
55. Petition of Horace L. Norris for license to build two pile wharves and two float stages in Plymouth Harbor at Saquish Head and Saquish Beach, respectively, in Plymouth. Granted June 28, 1920.
56. Petition of the Winnisimmet Ship Yard, Incorporated, for license to build two pile wharves and to remove old structures in Chelsea Creek, Chelsea. Granted June 28, 1920.
57. Petition of the town of Marion, by its board of selectmen, for license to remove portions of existing sea walls, to build new sea walls and a bridge, and to excavate, at and near South Wharf, so called, in Marion Harbor, Marion. Granted June 28, 1920.
58. Petition of the New England Oil Refining Company for license to build a pile dolphin in Taunton River, Fall River. Granted June 28, 1920.
59. Petition of the Old Colony Railroad Company for license to widen its pier, on piles, on Acushnet River, New Bedford. Granted June 28, 1920.
60. Petition of the Fairhaven Mills for license to build a bulkhead and fill solid in Acushnet River above Coggeshall Street bridge, Fairhaven. Granted June 28, 1920.
61. Petition of the Southern Massachusetts Telephone Company for license to lay a submarine cable in Pocasset Harbor from Wings Neck to Bassetts Island, Bourne. Granted July 6, 1920.
62. Petition of the New England Oil Refining Company for license to widen its trestle and build additions to its wharf, on piles, in Taunton River, Fall River. Granted July 9, 1920.
63. Petition of the Boston & Maine Railroad for license to rebuild its railroad bridge No. 32 on Bass River, Beverly and Salem. Granted July 16, 1920.
64. Petition of the Edison Electric Illuminating Company of Boston for license to lay cables under the tidewaters of a canal flowing into Town River Bay, Quincy. Granted July 16, 1920.
65. Petition of John F. Connor for license to build a pile wharf in Manchester Harbor, Manchester. Granted July 19, 1920.
66. Petition of the Boston & Maine Railroad for license to drive additional piles at its Mystic Docks on the north channel of Mystic River, Boston. Granted July 19, 1920.
67. Petition of the Fairhaven Mills for license to build a pile and timber



Nos.

- bulkhead and fill solid on Acushnet River, adjoining Coggeshall Street bridge, New Bedford. Granted July 19, 1920.
68. Petition of Joseph P. Sousa for license to build a pile pier in Provincetown Harbor, Provincetown. Granted July 23, 1920.
69. Petition of the Metropolitan District Commission for license to build a dam and gate in Blacks Creek at Blacks Creek bridge, Quincy. Granted Aug. 2, 1920.
70. Petition of Henry B. Day for license to build a pile pier in West Bay at Wianno, Barnstable. Granted Aug. 2, 1920.
71. Petition of H. P. Converse & Co. for license to build and maintain temporarily a pile and timber railroad trestle in Connecticut River, Springfield. Granted Aug. 5, 1920.
72. Petition of the New England Oil Refining Company for license to build a bulkhead and fill solid in Taunton River, Fall River. Granted Aug. 5, 1920.
73. Petition of the Boston Ice Company for license to reconstruct its dam, and maintain the same, at the outlet of Morse's Pond, Wellesley. Granted Aug. 5, 1920.
74. Petition of the Simpson's Patent Dry Dock Company for license to extend its wharf, on piles, and to dredge in Boston Harbor at East Boston. Granted Aug. 26, 1920.
75. Petition of the Commissioners for Boston and Cambridge Bridges for license to drive piles in Charles River at Brookline Street bridge, Boston and Cambridge. Granted Sept. 20, 1920.
76. Petition of Felton Bent for license to build a sea wall and fill solid in Stage Cove, Gloucester. Granted Sept. 20, 1920.
77. Petition of the board of trustees of the Boston Elevated Railway Company for license to dump snow and ice into the tidewaters of Boston Harbor. Granted Sept. 24, 1920.
78. Petition of the Boston Consolidated Gas Company for approval of plans for laying and maintaining conduits and pipes and doing other work in Mystic River near Malden bridge, Boston, as authorized by chapter 537 of the Acts of 1896. Granted Sept. 27, 1920.
79. Petition of the Standard Oil Company for license to build a pile wharf and four pile dolphins in Mount Hope Bay, Fall River. Granted Sept. 28, 1920.
80. Petition of Reuben Bigelow for license to build a pile and timber bulkhead, a marine railway and wharf, and to fill solid in Little Bay at Monument Beach, Bourne. Granted Sept. 28, 1920.
81. Petition of George S. Baldwin, William B. H. Dowse and George N. Talbot for license to build an earth dike, and a tide gate, in tide-water at the entrance to Phinney Bay at Osterville, Barnstable. Granted Sept. 28, 1920.
82. Petition of the Marine Biological Laboratory for license to build a sea wall, to fill solid and maintain a float stage in Eel Pond at Woods Hole, Falmouth. Granted Oct. 11, 1920.

Nos.

83. Petition of the city of Boston, by its commissioner of public works, for license to dump snow and ice into the tidewaters of Boston Harbor. Granted Oct. 11, 1920.
84. Petition of Francesco Gardella for license to build a concrete river wall and fill solid in Merrimack River, Haverhill. Granted Oct. 15, 1920.
85. Petition of Antonio S. Gardella for license to build a concrete river wall and fill solid in Merrimack River, Haverhill. Granted Oct. 15, 1920.
86. Petition of the Metropolitan Coal Company for license to fill solid in Mystic River easterly of and near Chelsea bridge, Chelsea. Granted Oct. 15, 1920.
87. Petition of the Metropolitan Coal Company for license to remove material and rebuild a portion of its sea wall in a dock adjoining Mystic River, Chelsea. Granted Oct. 15, 1920.
88. Petition of the city of Boston, by its commissioner of public works, for license to lay a cast-iron pipe overflow in Old Harbor, near the southerly end of K Street, and near the southerly end of N Street, South Boston. Granted Oct. 22, 1920.
89. Petition of the New England Power Company for license to erect and maintain a steel tower and string wires in and across Crystal Lake, Gardner. Granted Oct. 22, 1920.
90. Petition of the Southeastern Massachusetts Power and Electric Company for license to stretch wires or cables for a transmission line over Agawam River, Wareham. Granted Oct. 22, 1920.
91. Petition of the city of Beverly for license to fill solid and build a riprap slope in a dock in Beverly Harbor, known as "Old Ferry Way," Beverly. Granted Oct. 22, 1920.
92. Petition of Arthur Henry Lamborn for license to build a cement concrete wharf in Vineyard Haven Harbor, Tisbury. Granted Oct. 26, 1920.
93. Petition of the Bay State Freezer, Incorporated, for license to build a pile wharf in Yarmouthport Harbor, Yarmouth. Granted Nov. 5, 1920.
94. Petition of Richard M. Winfield for license to build a pile and timber bulkhead in West Bay at Osterville, Barnstable. Granted Nov. 12, 1920.
95. Petition of Frederick E. Pierce for license to build a pile and timber launchway on Mystic River, Somerville. Granted Nov. 17, 1920.
96. Petition of Richard T. Crane, Jr., for license to build and maintain pile and timber bulkheads, a pile pier and float, and to fill solid on Castle Neck River, Ipswich. Granted Nov. 26, 1920.

## MISCELLANEOUS PERMITS GRANTED DURING THE YEAR.

BOSTON & MAINE RAILROAD, to dredge berth between Piers 42 and 43 of Hoosac Tunnel docks, Boston. Granted Dec. 5, 1919.



MERRIMAC CHEMICAL COMPANY, to dredge berth at its wharf in Everett. Granted Dec. 5, 1919.

BOSTON, REVERE BEACH & LYNN RAILROAD COMPANY, to publish notice that Saugus River will be closed by the Boston, Revere Beach & Lynn Railroad Company to the passage of vessels through the Saugus River drawbridge, for the purpose of making necessary repairs to said bridge. Granted Dec. 23, 1919.

KEARNS CONSTRUCTION COMPANY, to use for storage purposes certain land at South Boston. Granted Dec. 26, 1919.

BOSTON MERCHANT MARINE SCALING COMPANY, to dump ashes at receiving basins at East Boston and South Boston. Granted Dec. 30, 1919.

NEW ENGLAND OIL REFINING COMPANY, BY THE ABERTHAW CONSTRUCTION COMPANY, AGENTS, to dredge in front of its wharf in Taunton River, Fall River. Granted Jan. 2, 1920.

ISAAC BLAIR & Co., INCORPORATED, to dump snow into tidewater from Dover Street bridge, Boston. Granted Jan. 26, 1920.

BOSTON DREDGING COMPANY, to deposit dredged material at receiving basins at East Boston and South Boston. Granted Jan. 1, 1920.

J. S. PACKARD DREDGING COMPANY, to deposit dredged material at receiving basins at East Boston and South Boston. Granted Jan. 1, 1920.

BAY STATE DREDGING AND CONTRACTING COMPANY, to deposit dredged material at receiving basins at East Boston and South Boston. Granted Jan. 1, 1920.

THE BALDWIN SHIPPING COMPANY, INCORPORATED, to use and occupy the trolley freight station and terminal at South Boston. Granted Jan. 23, 1920.

THE WESTERN UNION TELEGRAPH COMPANY, to occupy a room at Commonwealth Pier No. 5, South Boston. Granted Feb. 9, 1920.

BETTS BROTHERS & Co., to break up a lighter and deposit material on filled land of the Commonwealth near Jeffries Point, East Boston. Granted Feb. 13, 1920.

THE IRVING USEN COMPANY, to use and occupy building known as "Bosun's Locker" on Northern Avenue, South Boston. Granted Feb. 13, 1920.

FREDERIC D. FISK, DANIEL R. SORTWELL AND THEODORE HOAGUE, TRUSTEES, to dredge material from their flats in Charles River Basin on Cambridge side of the channel and southerly of Cambridge bridge. Granted Feb. 20, 1920.

ARNOLD SCOTT, ACTING IN BEHALF OF THE SUMMER RESIDENTS OF THE TOWN OF DARTMOUTH, to dredge basin on the northerly side of the wharf at Salters Point, Dartmouth. Granted March 12, 1920.

CITY OF BOSTON, BY ITS PUBLIC WORKS DEPARTMENT, to lay water pipes in certain streets on the Commonwealth flats at South Boston. Granted March 26, 1920.



- NEW BEDFORD GAS AND EDISON LIGHT COMPANY, to dredge in Acushnet River at its wharf at the foot of Coffin Street, New Bedford. Granted April 5, 1920.
- BOSTON ELEVATED RAILWAY COMPANY, to dredge berth at outer end of wharf at its power station in South Boston. Granted April 12, 1920.
- R. C. GROVESTINE, to remove sand and gravel from Nahant Beach in front of property of estate of Francis H. Johnson. Granted April 26, 1920.
- MARINE SCALING COMPANY OF NEW ENGLAND, to deposit ashes at the receiving basins at East Boston and South Boston. Granted April 26, 1920.
- BURTON-FURBER COAL COMPANY, to dredge berth in front of its wharf at East Boston. Granted April 28, 1920.
- BOSTON WOOL AND MERCHANDISE STORES, INCORPORATED, to lay and operate railroad tracks across Fargo Street, South Boston. Granted May 3, 1920.
- BETHLEHEM SHIPBUILDING CORPORATION, LTD., to excavate earth from the Commonwealth's property at Haywards Creek. Granted May 6, 1920.
- CITY OF BOSTON, BY ITS PUBLIC WORKS DEPARTMENT, to lay a 12-inch pipe in D Street from Fargo Street, South Boston. Granted May 10, 1920.
- SELECTMEN OF TOWN OF HULL, to take gravel from beach lying between the new supply pier of the Nantasket Beach Steamboat Company and the Hull Yacht Club Pier, Hull. Granted May 12, 1920.
- WILLIAM M. BAILEY COMPANY, to occupy lot of land at South Boston. Granted May 17, 1920.
- CITY OF BOSTON, BY ITS PUBLIC WORKS DEPARTMENT, to redredge berth at its Fort Hill dumping station on Atlantic Avenue at the foot of Oliver Street, Boston. Granted May 28, 1920.
- JOHN H. DRISCOLL, JR., to use and occupy Berry Island in Lake Winthrop, Holliston. Granted June 1, 1920.
- CITY FUEL COMPANY OF BOSTON, to dredge at its wharf at East Boston. Granted June 4, 1920.
- CITY FUEL COMPANY OF BOSTON, to dredge at its wharf on Neponset River, Milton. Granted June 4, 1920.
- BOSTON & MAINE RAILROAD, to publish notice that Mystic River will be closed by the Boston & Maine Railroad to the passage of vessels through the draw in its bridge on its Western Division, for the purpose of installing steel trusses in place of the present wooden ones. Granted June 15, 1920.
- ATLANTIC WORKS, to dredge a trench alongside their railway No. 3 at East Boston. Granted June 18, 1920.
- JOSEPH BURNETT COMPANY, assenting to the construction of five projections from the front wall of the building being constructed on the easterly side of D Street, South Boston. Granted June 24, 1920.

- NEW ENGLAND OIL REFINING COMPANY, to dredge near its wharf and trestle in Taunton River, Fall River. Granted July 9, 1920.
- TOWN OF IPSWICH, BY ITS HEALTH DEPARTMENT, to deposit clam shells in a cove adjacent to the town wharf on Ipswich River, Ipswich. Granted July 9, 1920.
- CITY OF FALL RIVER, to dredge at and near the wharf of the Bowen-ville Coal Company in Mount Hope Bay, Fall River. Granted July 23, 1920.
- GEORGE T. RENDLE COMPANY, to dredge the berth on the westerly side of its wharf at East Boston. Granted July 29, 1920.
- WILLIAM B. EMERY, STATE QUARTERMASTER, to deposit gravel at the foot of Depot Street in Plymouth Harbor, Plymouth. Granted Aug. 2, 1920.
- CITY OF FALL RIVER, to dredge in Taunton River at Central Street Creek, Fall River. Granted Aug. 5, 1920.
- CITY OF FALL RIVER, to dredge in Taunton River at and near the city wharf, Fall River. Granted Aug. 5, 1920.
- BOSTON SAND AND GRAVEL COMPANY, to dredge material at the mouth of Merrimack River and Ipswich River and in Annisquam River. Granted Aug. 5, 1920.
- FRANK A. ANDREWS, to remove gravel from the beach on and in front of his property on Phillips Road, Nahant. Granted Aug. 20, 1920.
- JOSEPH BURNETT & Co., to lay pipes in Fargo Street, South Boston. Granted Sept. 1, 1920.
- RICHARD T. GREEN COMPANY, to dredge at its marine railways, East Boston. Granted Sept. 7, 1920.
- BOSTON DREDGING COMPANY, to deposit in Boston Harbor, northerly of Governor's Island, material dredged from Weymouth Fore River. Granted Sept. 16, 1920.
- FRANK C. TAYLOR, to dredge material from Lagoon Pond and Vineyard Haven Harbor, Tisbury and Oak Bluffs. Granted Sept. 16, 1920.
- BOARD OF TRUSTEES OF THE BOSTON ELEVATED RAILWAY, to dump snow and ice upon a portion of the Commonwealth flats at South Boston. Granted Sept. 24, 1920.
- BETHLEHEM SHIPBUILDING CORPORATION, LTD., to build a temporary fence across property of the Commonwealth at Haywards Creek, Quincy and Braintree. Granted Oct. 11, 1920.
- CITY OF BOSTON, to dredge in Old Harbor at the outer ends of sewers leading from Kemp, Vale, H, K and N streets, South Boston. Granted Oct. 22, 1920.
- CITY OF BEVERLY, to dredge an area in Beverly Harbor. Granted Oct. 22, 1920.
- BOSTON SCALING AND BILGE CLEANING COMPANY, to deposit material at the receiving basin at Jeffries Point, East Boston. Granted Oct. 22, 1920.
- EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON, to dredge an area in Weymouth Fore River, Quincy. Granted Oct. 29, 1920.
- SWAMPSCOTT MASONIC BUILDING ASSOCIATES, INCORPORATED, to remove



boulders from beach in front of their property at Swampscott. Granted Nov. 12, 1920.

PUBLIC WORKS DEPARTMENT, DIVISION OF HIGHWAYS, to occupy an area under the viaduct extending from Summer Street to Commonwealth Pier No. 5, South Boston. Granted Nov. 22, 1920.

#### FISH WEIR PERMITS APPROVED DURING THE YEAR.

THOMAS M. DOUTHART. Permit issued by selectmen of Falmouth Dec. 1, 1919, to maintain and operate a fish trap in Buzzards Bay, Falmouth. Approved Dec. 5, 1919.

WILLIAM E. TAYLOR. Permit issued by selectmen of Falmouth Dec. 1, 1919, to maintain and operate a fish trap in Buzzards Bay, Falmouth. Approved Dec. 5, 1919.

EDMUND G. HOWES. Permit issued by selectmen of Chatham Dec. 1, 1919, to construct, maintain and operate a fish weir in Chatham South Bay, Chatham. Approved Dec. 12, 1919.

FRANK K. FREEMAN. Permit issued by selectmen of Orleans Oct. 10, 1919, to erect and maintain an eel fyke in the creek connecting Little Cove, so called, with Mill Pond, so called, in East Orleans. Approved Dec. 12, 1919.

OBED S. DAGGET. Permit issued by selectmen of West Tisbury Dec. 10, 1919, to construct and maintain a fish weir in Vineyard Sound, West Tisbury. Approved Jan. 2, 1920.

DAVID T. BUTLER. Permit issued by selectmen of Chilmark Dec. 9, 1919, to construct and maintain a fish weir in Vineyard Sound, Chilmark. Approved Jan. 9, 1920.

ERNEST C. MAYHEW. Permit issued by selectmen of Chilmark Dec. 9, 1919, to construct and maintain a fish weir in the tidewaters of Chilmark. Approved Jan. 9, 1920.

DANIEL H. NICKERSON. Permit issued by selectmen of Dennis Jan. 30, 1920, to construct and maintain a fish weir in Nantucket Sound, Dennis. Approved Feb. 9, 1920.

GEORGE A. FINNEY. Permit issued by selectmen of Plymouth Feb. 2, 1920, to construct and maintain a fish weir in Cape Cod Bay, Plymouth. Approved Feb. 9, 1920.

FREDERICK A. PEASE. Permit issued by selectmen of Fairhaven Feb. 2, 1920, to construct and maintain a fish weir in Buzzards Bay, Fairhaven. Approved Feb. 13, 1920.

MONOMOY WEIR AND FISH COMPANY. Permit issued by selectmen of Chatham Jan. 10, 1920, to construct and maintain a fish weir in Chatham Bay, Chatham. Approved Feb. 20, 1920.

ROSCOE H. GOULD. Permit issued by selectmen of Chatham Jan. 10, 1920, to construct and maintain a fish weir in Chatham Bay, Chatham. Approved Feb. 20, 1920.

GEORGE C. PARKER. Permit issued by selectmen of Chatham Jan. 10, 1920, to construct and maintain a fish weir in the northeast part of South Bay, Chatham. Approved Feb. 20, 1920.



- BENJAMIN R. BAKER. Permit issued by selectmen of Chatham Jan. 16, 1920, to construct and maintain a fish weir in Pleasant Bay, Chatham. Approved Feb. 20, 1920.
- ELMER F. MAYO. Permit issued by selectmen of Chatham Jan. 21, 1920, to construct and maintain a fish weir in Chatham South Bay, Chatham. Approved Feb. 20, 1920.
- BENJAMIN F. RICH. Permit issued by selectmen of Chatham Jan. 21, 1920, to construct and maintain a fish weir off Kidder's Point, Chatham. Approved Feb. 20, 1920.
- BENJAMIN L. JONES. Permit issued by selectmen of Chatham Feb. 16, 1920, to construct and maintain a fish weir in Chatham South Bay, Chatham. Approved Feb. 20, 1920.
- BENJAMIN L. JONES. Permit issued by selectmen of Chatham Feb. 16, 1920, to construct and maintain a fish weir in Chatham South Bay, Chatham. Approved Feb. 20, 1920.
- DAVID N. KELLEY. Permit issued by selectmen of Fairhaven Feb. 9, 1920, to construct and maintain a fish weir in Buzzards Bay, Fairhaven. Approved Feb. 20, 1920.
- SVEN HANSON. Permit issued by Municipal Council of Gloucester Jan. 28, 1920, to locate a fish trap in the tidewaters of Gloucester. Approved Feb. 20, 1920.
- ROBERT P. NOKEL. Permit issued by selectmen of Sandwich Feb. 21, 1920, to construct and operate a fish weir or weirs in Cape Cod Bay, Sandwich. Approved March 3, 1920.
- CLARINGTON E. ELDREDGE. Permit issued by selectmen of Chatham March 15, 1920, to construct and maintain a fish weir in Chatham South Bay, Chatham. Approved March 22, 1920.
- JAMES C. KELLEY. Permit issued by selectmen of Dennis March 15, 1920, to construct and maintain a fish weir in Nantucket Sound, Dennis. Approved March 22, 1920.
- ELDREDGE WOODBURY. Permit issued by municipal council of Gloucester, March 17, 1920, to maintain a fish trap at Plum Cove, Gloucester. Approved March 26, 1920.
- SIMON BERRIO. Permit issued by selectmen of Wellfleet March 13, 1920, to construct and maintain a fish weir in Cape Cod Bay, Wellfleet. Approved April 2, 1920.
- JOHN W. STUBBS. Permit issued by selectmen of Wellfleet March 13, 1920, to construct and maintain a fish weir in Cape Cod Bay, Wellfleet. Approved April 2, 1920.
- FRANK KEEZER. Permit issued by selectmen of Nahant March 22, 1920, to construct and maintain a fish weir off Bass Point, Nahant. Approved April 5, 1920.
- AARON KELLEY. Permit issued by selectmen of Dennis March 29, 1920, to construct and maintain a fish weir in Nantucket Sound, Dennis. Approved April 5, 1920.

- OTIS B. LUCE. Permit issued by selectmen of Gosnold March 20, 1920, to construct a fish trap in Vineyard Sound, Gosnold. Approved April 5, 1920.
- GEORGE C. PARKER. Permit issued by selectmen of Chatham April 5, 1920, to construct and maintain a fish weir on the north side of South Bay, Chatham. Approved April 9, 1920.
- BENJAMIN L. JONES. Permit issued by selectmen of Chatham March 31, 1920, to construct and maintain a fish weir in Chatham South Bay, Chatham. Approved April 9, 1920.
- L. PICKERT FISH COMPANY. Permit issued by selectmen of Plymouth March 31, 1920, for location of fish weir in Saquish Cove, Plymouth. Approved April 9, 1920.
- SAMUEL M. KEHOE. Permit issued by selectmen of Swampscott April 2, 1920, to construct and maintain a fish trap in Swampscott Bay, Swampscott. Approved April 12, 1920.
- HEATH BROTHERS. Permit issued by the selectmen of Manchester April 13, 1920, to construct and maintain a fish weir in the tidewaters of Manchester. Approved April 28, 1920.
- NORMAN BENSON. Permit issued by selectmen of West Tisbury April 17, 1920, to construct and maintain a fish weir in Vineyard Sound, West Tisbury. Approved April 28, 1920.
- EDWIN P. COOK. Permit issued by selectmen of Wellfleet April 24, 1920, to construct and maintain a fish weir in the tidewaters of Wellfleet. Approved April 28, 1920.
- JOSEPH C. FOREND. Permit issued by selectmen of Mattapoisett April 30, 1920, to construct and maintain a fish trap in Buzzards Bay, Mattapoisett. Approved May 6, 1920.
- THADDEUS F. ELLIS. Permit issued by selectmen of Orleans May 1, 1920, to construct and maintain a fish weir in Cape Cod Bay, Orleans. Approved May 6, 1920.
- JOSEPH B. GOULART. Permit issued by selectmen of Fairhaven May 3, 1920, to construct and maintain a fish weir in Little Bay, Fairhaven. Approved May 17, 1920.
- SHIRLEY E. NICKERSON. Permit issued by selectmen of Nantucket April 16, 1920, to construct and maintain a fish weir in tidewaters of Nantucket. Approved June 18, 1920.
- WILLIAM M. KENDRICK. Permit issued by selectmen of Chatham June 9, 1920, to set and maintain a fyke for eels in a creek above the dike extending from Samuel Ryder's Island, Chatham. Approved July 18, 1920.
- H. L. PEAKS. Permit issued by selectmen of Gosnold June 25, 1920, to construct and maintain a fish trap in Buzzards Bay, Gosnold. Approved July 12, 1920.
- EUGENE B. ELLIS. Permit issued by selectmen of Brewster July 3, 1920, to place two fish traps in Mill Creek, Brewster. Approved July 12, 1920.



- DAVID E. CURRAN. Permit issued by selectmen of Wellfleet July 10, 1920, to erect and maintain two eel fykes below Herring River dike, Wellfleet. Approved July 16, 1920.
- EDWIN P. COOK. Permit issued by selectmen of Wellfleet July 10, 1920, to erect and maintain two eel fykes in Duck Creek, Wellfleet. Approved July 16, 1920.
- FRANK A. WILLIAMS. Permit issued by selectmen of Wellfleet July 10, 1920, to erect and maintain two fykes below Herring River dike, Wellfleet. Approved July 16, 1920.
- F. THOMAS ELLIS. Permit issued by selectmen of Brewster Aug. 13, 1920, to place two fish traps in Mill Creek, Brewster. Approved Aug. 17, 1920.
- BAY STATE FREEZER, INCORPORATED. Permit issued by selectmen of Yarmouth June 16, 1920, to set and maintain a fish weir on the north shore of Yarmouth. Approved Sept. 10, 1920.
- BAY STATE FREEZER, INCORPORATED. Permit issued by selectmen of Yarmouth June 16, 1920, to set and maintain a fish weir on the north shore of Yarmouth. Approved Sept. 10, 1920.
- FREDERICK YOUNG. Permit issued by selectmen of Brewster Sept. 4, 1920, to place a fish trap in Quivet Creek, Brewster. Approved Sept. 10, 1920.
- FREDERICK YOUNG. Permit issued by selectmen of Brewster Sept. 4, 1920, to place a fish trap in Mill Creek, Brewster. Approved Sept. 10, 1920.
- ORICK D. YOUNG. Permit issued by selectmen of Chatham Sept. 2, 1920, to maintain and fish a fyke for eels in Henry Harding's Creek, Chatham. Approved Sept. 10, 1920.
- CHARLES W. SNOW. Permit issued by selectmen of Truro Sept. 4, 1920, to construct eel fykes in Pamet River, Truro. Approved Sept. 13, 1920.
- JAMES Y. GILL. Permit issued by selectmen of Wellfleet Sept. 11, 1920, to erect and maintain eel fykes in Silver Spring Creek, Wellfleet. Approved Sept. 24, 1920.
- MAURICE E. MAKER. Permit issued by selectmen of Wellfleet Sept. 11, 1920, to erect and maintain an eel fyke in Duck Creek, Wellfleet. Approved Sept. 24, 1920.
- BERT W. BELL. Permit issued by selectmen of Wellfleet Sept. 11, 1920, to erect and maintain an eel fyke in Blackfish Creek, Wellfleet. Approved Sept. 24, 1920.
- CLARENCE M. LOMBARD. Permit issued by selectmen of Wellfleet Sept. 20, 1920, to erect and maintain an eel fyke in Duck Creek, Wellfleet. Approved Sept. 24, 1920.
- TIMOTHY W. BLACK. Permit issued by selectmen of Brewster Sept. 13, 1920, to place a fish trap and an eel fyke near Mill Creek, Brewster. Approved Sept. 24, 1920.
- FREDERICK E. E. JOHNSON. Permit issued by selectmen of Chatham Sept. 22, 1920, to maintain an eel fyke in Smiths Dyke Creek, Chatham. Approved Sept. 27, 1920.



SHERMAN FISHER. Permit issued by selectmen of Wellfleet Sept. 25, 1920, to erect and maintain an eel fyke in Duck Creek, Wellfleet. Approved Sept. 28, 1920.

FREDERICK THACHER. Permit issued by selectmen of Yarmouth Oct. 28, 1920, to erect and maintain two fish weirs in Nantucket Sound, Yarmouth. Approved Nov. 5, 1920.

ARTHUR S. WEEKS. Permit issued by selectmen of Falmouth Nov. 1, 1920, to place a fish trap in Buzzards Bay, Falmouth. Approved Nov. 5, 1920.

FREDERICK THACHER. Permit issued by selectmen of Yarmouth Nov. 23, 1920, to erect and maintain a double fish weir in Nantucket Sound, Yarmouth. Approved Nov. 29, 1920.

## RECOMMENDATIONS FOR LEGISLATION.

## DIVISION OF WATERWAYS AND PUBLIC LANDS.

The policy of developing and improving the water front of Boston Harbor, from the viewpoint of anticipating the constantly increasing needs of facilities for commerce, manufacturing and other business, should be continued. Expenditures for most of the important projects are provided for in the recommendations for consideration in the Governor's budget. They include continued expenditures for dredging and filling in East Boston and South Boston, construction of piers, bulkheads, roadways and railroad connections upon the land already developed at these points, and also at Haywards Creek in Quincy and Braintree.

Such other demands as are made necessary by projects already established, requiring funds for maintenance and further development, are also included in recommendations that have been submitted for the Governor's budget.

*Harbor Lines in Boston Harbor.*

14. In determining the location of bulkheads, and other works in connection with the development of the property of the Commonwealth in Boston Harbor, it is necessary to change and establish certain harbor lines in East Boston and in South Bay.

15. Construction along the banks of important rivers in the Commonwealth requires the approval of the Division of Waterways and Public Lands in many cases where the river line is not already definitely fixed. In order that there may be established a line which shall result in properly protecting the flow of water, as well as preserving a uniform river front, it is important that definite lines should be fixed. The Division recommends such a line for a portion of the Merrimack River at Haverhill.

*Conservation of Water Resources.*

The Division of Waterways and Public Lands and its predecessors have in past years given considerable study and made extended investigations relative to the conservation, development and utilization of the water resources of the Commonwealth. These studies culminated in recommendations for legislation which were submitted in 1920. This bill was carefully considered, and in its amended form, as House Bill No. 1475, was referred to the General Court of 1921. It is recommended that this bill be reconsidered.



## APPENDIX.

## STATEMENT OF FINANCIAL SECRETARY, DIVISION OF WATERWAYS AND PUBLIC LANDS, DEC. 1, 1920.

## INCOME OF HARBOR COMPENSATION FUND.

Balance of income Nov. 30, 1919 . . . . .	\$52,480 02
Accrued Dec. 1, 1919, to Feb. 28, 1920 . . . . .	5,790 57
Transferred to Port of Boston Fund, March 31, 1920 . . . . .	\$58,270 59

## HARBOR COMPENSATION FUND.

Receipts Dec. 1, 1919, to Nov. 30, 1920 . . . . .	\$6,665 00
Appropriation for investigation as to certain rivers of Boston Harbor (chapter 17, Resolves of 1919), . . . . .	\$20,000 00
Balance Dec. 1, 1920 . . . . .	19,184 74
Appropriation for investigation as to feasibility of bridge or tunnel, Boston to East Boston (chapter 51, Resolves of 1919; item 329c, chapter 242, Special Acts of 1919) . . . . .	\$10,000 00
Balance Dec. 1, 1920 . . . . .	19,069 34

## PORT OF BOSTON FUND.

## Chapter 663, Acts of 1912.

Balance Nov. 30, 1919 . . . . .	\$323,389 20
Receipts Dec. 1, 1919, to Nov. 30, 1920 . . . . .	4,609,580 82
Receipts 1920 (contribution by city of Quincy for dredging at Houghs Neck) . . . . .	2,000 00
	\$4,934,970 02

Appropriation (chapter 225, Acts of 1920), personal services . . . . .	\$52,000 00	
Expenditures . . . . .	52,000 00	\$52,000 00
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Appropriation (chapter 153, Special Acts of 1919), office and incidental expenses, balance brought forward . . . . .	\$795 25	
Appropriation (chapter 225, Acts of 1920), office and incidental expenses . . . . .	7,500 00	
Appropriation (chapter 644, Acts of 1920), office and incidental expenses . . . . .	171 21	
<hr/>		
Expenditures . . . . .	\$8,466 46	8,466 46
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Appropriation (chapter 225, Acts of 1920), traveling expenses . . . . .	\$1,200 00	
Expenditures . . . . .	922 02	922 02
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Appropriation (chapter 225, Acts of 1920), publicity . . . . .	\$3,200 00	
Expenditures . . . . .	1,361 12	1,361 12
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Appropriation (chapter 153, Special Acts of 1919), operation and maintenance of Commonwealth Pier No. 5, balance brought forward . . . . .	\$211 35	
Appropriation (chapter 225, Acts of 1920) . . . . .	76,000 00	
Appropriation (chapter 644, Acts of 1920) . . . . .	815 96	
<hr/>		
Expenditures (1920) . . . . .	\$77,027 31	77,027 31
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Appropriation (chapter 225, Acts of 1920), repairing damages . . . . .	\$25,000 00	
Expenditures . . . . .	25,000 00	25,000 00
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[PORT OF BOSTON FUND — *Continued.*]

Appropriation (chapter 225, Acts of 1920), triangulation points and stations	.	.	.	.	\$1,000 00
Expenditures	.	.	.	.	1,000 00
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Appropriation (chapter 153, Special Acts of 1919), maintenance of Commonwealth's property balance brought forward	.	.	.	.	\$803 15
Appropriation (chapter 225, Acts of 1920)	.	.	.	.	55,000 00
Appropriation (chapter 644, Acts of 1920)	.	.	.	.	3,787 80
<hr/>					
Expenditures	.	.	.	.	\$59,590 95
	.	.	.	.	59,590 95
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Port development appropriations:					
Appropriation (chapter 351, Special Acts of 1917), development of Commonwealth flats	.	.	.	.	\$100,000 00
Expenditures	.	.	.	.	8,514 14
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Appropriation (chapter 143, General Acts of 1918), Reserved Channel bulkhead and Dry Dock Avenue	.	.	.	.	\$300,000 00
Appropriation (chapter 145, Special Acts of 1919), Reserved Channel bulkhead and Dry Dock Avenue	.	.	.	.	70,000 00
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Expenditures to Nov. 30, 1919	.	.	.	.	\$370,000 00
Expenditures (1920)	.	.	.	.	347,975 15
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Expenditures to Nov. 30, 1919	.	.	.	.	\$302,413 85
Expenditures (1920)	.	.	.	.	45,561 30
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Appropriation (chapter 143, General Acts of 1918), completing dry dock	.	.	.	.	\$778,342 00
Expenditures to Nov. 30, 1919	.	.	.	.	\$633,083 92
Expenditures (1920)	.	.	.	.	145,258 08
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					45,561 30
					\$778,342 00
					778,342 00
					145,258 08
					59,590 95
					8,514 14
					\$300,000 00
					70,000 00
					\$370,000 00
					347,975 15
					\$778,342 00
					778,342 00
					145,258 08



Appropriation (chapter 143, General Acts of 1918), railroad tracks, etc.	.	.	.	\$200,000 00
Appropriation (chapter 162, General Acts of 1919), tracks, roadways, etc.	.	.	.	175,000 00
				<hr/>
				\$375,000 00
Expenditures to Nov. 30, 1919	.	.	\$35,101 13	
Expenditures (1920)	.	.	74,926 06	74,926 06
				<hr/>
Appropriation (chapter 143, General Acts of 1918), dredging and filling	.	.	.	\$500,000 00
Appropriation (chapter 162, General Acts of 1919), dredging and filling	.	.	.	500,000 00
Appropriation (chapter 225, Acts of 1920), dredging and filling	.	.	.	100,000 00
				<hr/>
				\$1,100,000 00
Expenditures to Nov. 30, 1919	.	.	\$446,463 29	
Expenditures (1920)	.	.	422,480 20	422,480 20
				<hr/>
Appropriation (chapter 225, Acts of 1920), street and pier development, South Boston	.	.	.	\$200,000 00
Expenditures (1920)	.	.	.	180 79
				<hr/>
				180 79
Appropriation (chapter 162, General Acts of 1919), extension of Maverick Street, East Boston	.	.	.	\$65,000 00
Expenditures	.	.	.	-
				<hr/>
Appropriation (chapter 162, General Acts of 1919), extension of East Boston bulkhead	.	.	.	\$100,000 00
Appropriation (chapter 225, Acts of 1920)	.	.	.	100,000 00
				<hr/>
				\$200,000 00
Expenditures to Nov. 30, 1919	.	.	\$49,272 64	
Expenditures (1920)	.	.	38,160 28	38,160 28
				<hr/>

PORT OF BOSTON FUND — *Concluded.*

Appropriation (chapter 162, General Acts of 1919), Haywards Creek	.	.	.	.	\$100,000 00	
Appropriation (chapter 225, Acts of 1920)	.	.	.	.	100,000 00	
						\$200,000 00
Expenditures to Nov. 30, 1919	.	.	.	.	\$87,051 40	
Expenditures (1920)	.	.	.	.	\$115,797 63	
Contributions by Massachusetts Oil Refining Company and Bethlehem Shipbuilding Corporation	.	.	.	.	35,000 00	80,797 63
						167,849 03
						\$80,797 63
Appropriation (chapter 162, General Acts of 1919), dredging minor channels, Boston Harbor	.	.	.	.	\$100,000 00	
Appropriation (chapter 225, Acts of 1920)	.	.	.	.	100,000 00	
						\$200,000 00
Expenditures to Nov. 30, 1919	.	.	.	.	\$61,228 77	
Expenditures (1920)	.	.	.	.	\$279,178 93	
Contributions by Nantasket Beach Steamboat Company and others	.	.	.	.	90,000 00	189,178 93
						250,407 70
						189,178 93
Appropriation (chapter 162, General Acts of 1919), maintenance of Commonwealth Pier No. 1, balance brought forward	.	.	.	.	\$7 57	
Appropriation (chapter 225, Acts of 1920)	.	.	.	.	15,000 00	
Appropriation (chapter 644, Acts of 1920)	.	.	.	.	22 21	
						\$15,029 78
Expenditures (1920)	.	.	.	.	15,029 78	15,029 78
Total expenditures	.	.	.	.	.	\$1,245,455 05
Payments by State Treasurer (Development of Port of Boston Loan Fund bonds)	.	.	.	.	.	2,328,561 59
						\$3,574,016 64

Balance Nov. 30, 1920 . . . . .	\$1,360,953 38
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## BOSTON HARBOR DREDGING.

Appropriation (chapter 348, Special Acts of 1917) from Harbor Compensation Fund . . . . .	\$100,000 00
Expenditures to Nov. 30, 1919 . . . . .	62,556 59
Unexpended balance Nov. 30, 1920 . . . . .	\$37,433 41

## QUINCY BAY SHORE (HOUGHS NECK SEA WALL).

Appropriation (chapter 376, Special Acts of 1917) . . . . .	\$15,000 00
Contribution, city of Quincy . . . . .	5,000 00
	\$20,000 00

## To Nov. 30 —

	1918.	1919.	1920.	Total.
Contract work . . . . .	\$5,440 00	—	\$12,510 81	\$17,950 81
Engineering . . . . .	1,397 53	\$393 55	166 77	1,957 85
Unexpended balance Nov. 30, 1920 . . . . .	\$6,837 53	\$393 55	\$12,677 58	\$19,908 66
				\$91 34





# WATERWAYS FUND.

Chapter 21, General Acts of 1918.

## RECEIPTS, 1920.

## Port of Boston Fund.

## Waterways Fund.





## EXPENDITURES FOR DEVELOPMENT AND IMPROVEMENT IN BOSTON HARBOR, 1859-1920, INCLUSIVE.

PAYMENTS.	Boston Harbor.	Commonwealth Flats at East Boston.	Commonwealth Flats at South Boston. <sup>1</sup>	Commonwealth Pier No. 5.	Dry Dock.	Haywards Creek.	Mystic River.
To Nov. 30, 1919 . . . . .	\$1,617,361 95	\$1,607,232 50	\$6,048,605 93	\$3,985,271 25	\$2,961,645 51	\$259,818 35	\$264,280 31
1920.							
East Boston Tunnel investigation (chapter 51, Resolves of 1919).	8,424 75	-	-	-	-	-	-
Investigation as to certain rivers of Boston Harbor . . . . .	-	-	-	-	-	-	430 31
Quincy Bay shore . . . . .	12,677 58	-	-	-	-	-	-
Port development appropriations (chapter 351, Special Acts of 1917):							
Development of Commonwealth flats (chapter 143, General Acts of 1918).	-	-	-	-	-	8,514 14	-
Reserved Channel bulkhead . . . . .	-	-	45,561 30	-	145,258 08	-	-
Railroad tracks and roadways (chapter 143, General Acts of 1918, and chapter 162, General Acts of 1919).	-	-	74,926 06	-	-	-	-
Dredging and filling (chapter 162, General Acts of 1919) . . . . .	-	188,500 80	223,676 35	-	10,303 05	-	-
Haywards Creek development . . . . .	-	-	-	-	-	115,797 63	-
Extension, East Boston bulkhead (chapter 225, Acts of 1920).	-	38,160 28	-	-	-	-	-
Street and pier development . . . . .	-	-	180 79	-	-	-	-
Port of Boston fund (chapter 225, Acts of 1920) . . . . .	-	-	-	-	-	-	-
Boston Harbor, main channel . . . . .	-	-	-	-	-	-	133,119 16
Maintenance, Commonwealth property . . . . .	-	-	-	-	194 51	-	-
Maintenance, Commonwealth Pier No. 1 . . . . .	-	-	-	-	-	-	-
	\$1,638,464 28	\$1,833,893 58	\$6,392,950 43	\$3,986,271 25	\$3,117,401 15	\$384,130 13	\$397,838 78

<sup>1</sup> Includes cost of Commonwealth Pier No. 6, \$1,067,598.90.

EXPENDITURES FOR DEVELOPMENT AND IMPROVEMENT IN BOSTON HARBOR, 1859-1920, INCLUSIVE — *Concluded.*

PAYMENTS.	Malden River. <sup>1</sup>	Chelsea Creek.	Commercial Point, Dorchester Bay.	Commonwealth Pier No. 1, East Boston.	Commonwealth Pier No. 5, Operation and Maintenance.	Commonwealth Pier No. 1, Maintenance.	Maintenance of Other Property of Commonwealth.
To Nov. 30, 1919 . . . . .	-	\$60,171 24	\$53,213 10	\$1,113,905 89	\$249,563 71	\$5,837 28	\$137,030 98
<b>1920.</b>							
East Boston Tunnel investigation (chapter 51, Resolves of 1919).	-	-	-	-	-	-	-
Investigation as to certain rivers of Boston Harbor . . .	-	134 62	-	-	-	-	-
Quincy Bay shore . . . . .	-	-	-	-	-	-	-
Port development appropriations (chapter 351, Special Acts of 1917):							
Development of Commonwealth flats (chapter 143, General Acts of 1918).	-	-	-	-	-	-	-
Reserved Channel bulkhead . . . . .	-	-	-	-	-	-	-
Railroad tracks and roadways (chapter 143, General Acts of 1918, and chapter 162, General Acts of 1919).	-	-	-	-	-	-	-
Dredging and filling (chapter 162, General Acts of 1919) .	-	-	-	-	-	-	-
Haywards Creek development . . . . .	-	-	-	-	-	-	-
Extension, East Boston bulkhead (chapter 225, General Acts of 1920).	-	-	-	-	-	-	-
Street and pier development . . . . .	-	-	-	-	-	-	-
Port of Boston fund (chapter 225, Acts of 1920) . . .	-	-	-	-	77,027 31	-	-
Boston Harbor, main channel . . . . .	\$35,000 00	-	-	-	-	-	59,396 44
Maintenance, Commonwealth property . . . . .	-	-	-	752 91	-	14,276 87	-
Maintenance, Commonwealth Pier No. 1 . . . . .	-	-	-	-	-	-	-
	\$35,000 00	\$60,305 86	\$53,213 10	\$1,114,658 80	\$326,591 02	\$20,114 15	\$196,427 42

Grand total, \$19,557,259.95.

<sup>1</sup> Expended by United States government.

APPROPRIATIONS, CONTRIBUTIONS AND EXPENDITURES FOR IMPROVEMENT OF SMALL HARBORS AND CHANNELS WITHIN BOSTON HARBOR, UNDER THE DIRECTION OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS AND PUBLIC LANDS, AND ITS PREDECESSORS, FROM 1893 TO 1920, INCLUSIVE.

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Cottage Park Channel, Winthrop.	Dredging . . .	\$9,525 92	-	\$9,504 58
Dorchester, easterly shore, Boston.	Dredging . . .	70,363 66	-	70,171 31
Harbor View, Boston . . .	Dredging . . .	10,146 00	-	146 00
Hingham Harbor . . .	Dredging . . .	13,180 69	\$3,000 00	16,180 69
Houghs Neck Channel, Quincy	Dredging . . .	26,952 54	1,500 00	28,452 54
Island End River, Everett . .	Survey . . .	264 10	-	264 10
Jeffries Point Channel . . .	Dredging . . .	12,961 90	-	2,961 90
Mystic River (near Lawrence and Wiggin's Wharf).	Dredging . . .	5,927 70	-	5,927 70
Neponset River . . .	Dredging . . .	44,152 59	-	44,151 85
Orient Heights Channel . . .	Dredging . . .	43,446 15	-	43,090 67
Pleasant Park Yacht Club Channel.	Dredging . . .	3,154 92	-	3,154 92
Point Shirley . . .	Dredging . . .	1,986 53	-	1,986 53
Shirley Gut, Boston and Winthrop.	Dredging . . .	1,906 20	-	1,906 20
South Boston, southerly shore	Dredging . . .	126,972 48	-	126,972 44
Stony Beach, Hull . . .	Sea wall . . .	11,607 90	-	11,335 07
Weir River, Hull . . .	Dredging . . .	99,580 10	25,000 00	124,580 10
Wessagussett Channel . . .	Dredging . . .	815 20	-	815 20
Weymouth Fore River . . .	Dredging . . .	46,838 34	-	31,913 85
Winthrop Harbor Channels . .	Dredging . . .	27,962 02	1,000 00	26,707 44
Wollaston Channel . . .	Dredging . . .	34,309 77	-	33,888 38
Totals . . .	. . .	\$592,054 71	\$30,500 00	\$584,111 47

CONTRIBUTIONS AND EXPENDITURES FOR RIVER AND HARBOR WORK FROM DEC. 1, 1919, TO NOV. 30, 1920, UNDER CHAPTER 481, ACTS OF 1909.

LOCATION.	Character of Work.	Contributions.	Expenditure.
Acushnet River . . .	Dredging . . .	-	\$75,960 27
Bass River, Yarmouth . . .	Filling basin . . .	-	2,547 35
Brant Rock, Marshfield . . .	Spur jetties . . .	-	3,138 74



CONTRIBUTIONS, ETC. — *Concluded.*

LOCATION.	Character of Work.	Contributions.	Expenditure.
Cohasset Harbor . . . . .	Survey . . . . .	-	\$298 19
Connecticut River, Holyoke . . .	Marking and lighting old piers	-	181 74
Connecticut River, West Springfield	Riprapping bank . . . . .	-	4,070 79
Cotuit Harbor . . . . .	Dredging . . . . .	-	500 00
East Bay, Osterville . . . . .	Dredging . . . . .	\$10,000 00	44,097 21
Ellisville Harbor . . . . .	Dredging . . . . .	-	2,857 50
Falmouth Heights . . . . .	Sea wall . . . . .	-	1,867 42
Falmouth Inner Harbor . . . . .	Dredging . . . . .	-	9,912 35
Five Pound Island, Gloucester . .	Dredging . . . . .	-	18,649 11
Gloucester Harbor . . . . .	Survey . . . . .	-	361 77
Herring River, Harwich . . . . .	Survey . . . . .	-	362 07
Ipswich River . . . . .	Wall and bulkhead . . . . .	-	441 22
Lobster Cove, Gloucester . . . . .	Dredging . . . . .	-	15,443 28
Lynn Harbor . . . . .	Dredging . . . . .	-	13,005 74
Lynn Harbor and Saugus River . . .	Dredging . . . . .	-	1,670 04
Merrimack River . . . . .	Surveys . . . . .	-	556 91
New Bedford Harbor . . . . .	Pier . . . . .	13,446 74 <sup>1</sup>	14,974 11
Newburyport Harbor . . . . .	Survey . . . . .	-	9 02
Pamet River . . . . .	Dredging . . . . .	-	19,221 69
Plymouth Harbor . . . . .	Dredging . . . . .	-	1,432 90
Popponeset Bay . . . . .	Dredging . . . . .	-	14,760 20
Point Shirley . . . . .	Shore protection . . . . .	-	130 45
Scituate . . . . .	Sea walls . . . . .	7,000 00	9,011 68
Scituate Harbor . . . . .	Dredging . . . . .	-	30,920 16
Sesuit Harbor . . . . .	Jetty . . . . .	-	513 50
Waquoit Bay . . . . .	Repairing breakwater . . . . .	-	9,071 81
Westfield River . . . . .	Extension of jetties . . . . .	-	1,296 90
West Bay . . . . .	Dredging . . . . .	10,000 00	10,648 71
Winthrop Shore . . . . .	Sea wall . . . . .	-	18 72
Witchmere Harbor . . . . .	Dredging . . . . .	-	149 83
Yarmouthport Harbor . . . . .	Dredging . . . . .	-	5,000 00
General . . . . .	- - -	-	4,627 24
		\$40,446 74	\$317,708 62

<sup>1</sup> Paid by surety company.

APPROPRIATIONS, CONTRIBUTIONS AND EXPENDITURES FROM 1893 TO 1920, INCLUSIVE, FOR RIVER AND HARBOR WORK, UNDER THE DIRECTION OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS AND PUBLIC LANDS, AND ITS PREDECESSORS, TO NOV. 30, 1920 (EXCEPTING BOSTON HARBOR).

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Acushnet River . . .	Inspection . . .	\$75,962 42	-	\$75,962 42
Allens Harbor, Harwich . .	Surveys . . .	302 00	-	302 00
Allens Pond, Dartmouth . .	Survey . . .	195 95	-	195 95
Annisquam River, Gloucester .	Dredging, removing ledges and riprap.	107,630 63	-	107,260 75
Apponagansett Harbor and River, Dartmouth.	Survey, dredging and stone breakwater.	56,159 59	-	55,786 05
Barnstable Harbor . . .	Survey and dredging	17,392 18	\$1,500 00	18,554 64
Bass River, Beverly . . .	Dredging . . .	25,539 81	55,535 75	81,075 56
Bass River, Dennis and Yarmouth.	Jetties, dredging and survey.	88,089 74	2,500 00	89,104 74
Brant Rock, Marshfield . .	Sea wall . . .	4,104 58	-	4,104 58
Bucks Creek, Chatham . . .	Jetties, survey and dredging.	29,739 06	1,500 00	31,067 74
Buzzards Bay, Falmouth . .	Survey . . .	166 11	-	166 11
Cataumet Harbor and Squeague Pond, Bourne and Falmouth.	Dredging . . .	26,520 68	7,350 00	33,726 77
Centerville River, Barnstable	Dredging . . .	6,103 22	1,500 00	7,603 22
Cohasset Harbor, Cohasset and Scituate.	Breakwater and dredging.	36,172 55	20,691 88	56,864 43
Concord River, Billerica . .	Removing boulders .	1,514 59	150 00	1,664 59
Connecticut River . . .	Investigation of navigation and surveys.	10,637 04	-	6,970 99
Connecticut River . . .	Improvement . . .	103 63	-	103 63
Connecticut River, Agawam .	Protective work . .	20,396 09	-	18,814 42
Connecticut River, Chicopee .	Survey, wall and riprap.	25,149 02	640 00	25,789 02
Connecticut River, Hadley . .	Protective work and diversion wall.	100,443 65	500 00	97,740 94 <sup>1</sup>
Connecticut River, Hatfield .	Dikes and riprap . .	14,751 82	1,000 00	14,952 57
Connecticut River, Holyoke .	Marking and lighting old piers.	559 03	-	559 03
Connecticut River, Holyoke .	Dredging and protective work.	18,815 78	415 00	4,230 78
Connecticut River, Northampton.	Protective work . .	1,525 80	-	1,524 20
Connecticut River, South Hadley.	Wall . . .	6,406 36	1,000 00	7,379 58
Connecticut River, West Springfield.	Protective work . .	12,002 78	-	11,919 27 <sup>2</sup>
Conservation of waters . . .	Investigation . . .	38,000 00	-	35,766 26
Cotuit Harbor, Barnstable . .	Dredging and survey	60,248 02	2,000 00	59,219 91
Cuttyhunk Harbor, Gosnold .	Jetties and dredging .	61,828 25	9,000 00	70,754 18
Deacons Pond Harbor, Falmouth. <sup>3</sup>	- . .	-	-	-

<sup>1</sup> From 1888, inclusive.<sup>2</sup> From 1891, inclusive.<sup>3</sup> See Falmouth Inner Harbor.

APPROPRIATIONS, ETC. — *Continued.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Duxbury Bay and Harbor . . .	Dredging . . . .	\$27,798 79	—	\$27,798 79
East Bay, Osterville . . .	Jetties, dredging and removing scows.	57,961 56	\$10,000 00	67,627 00
Edgartown Harbor . . . .	Survey . . . .	205 65	—	205 65
Ellisville Harbor . . . .	Dredging . . . .	15,144 82	—	15,144 82
Essex County beaches . . .	Survey . . . .	1,000 00	—	1,000 00
Essex River . . . . .	Dredging . . . .	5,000 00	—	5,000 00 <sup>1</sup>
Fall River Harbor . . . .	Improvement . . .	350,290 54	—	1,130 18
Falmouth Heights, Falmouth	Sea wall . . . .	37,006 94	13,000 00	50,006 94
Falmouth Inner Harbor . . .	Dredging, jetties and wall.	67,538 57	14,000 00	81,538 57
Glades, North Scituate . . .	Survey . . . .	51 63	—	51 63
Gloucester Harbor, Gloucester	Dredging and removing ledges.	74,767 21	7,500 00	89,767 21
Green Harbor, Marshfield . .	Jetties, dredging and survey.	90,804 54	—	76,466 85
Gun Rock Point, Hull . . .	Breakwater . . . .	48,096 11	10,000 00	58,096 11
Harbor Cove, Gloucester . . .	Survey and dredging	18,528 73	866 00	19,394 73
Herring Creek, Scituate . . .	Survey . . . .	253 76	—	253 76
Herring River, Harwich . . .	Jetties and dredging .	39,734 34	2,500 00	41,590 04
Herring River, Wellfleet . . .	Dikes and ditches . .	11,832 74	10,000 00	21,800 73
Housatonic River, Sheffield . .	Survey . . . .	2,011 29	—	2,011 29
Hull . . . . .	Sea wall and survey .	25,258 32	8,882 06	34,140 38
Humarock Beach, Scituate . .	Survey . . . .	250 00	—	236 07
Hyannisport, Barnstable . . .	Survey and breakwater.	49,988 82	2,500 00	52,488 82
Improvement of rivers and harbors.	General expenses . .	11,620 06	—	11,620 06
Ipswich River, Ipswich . . .	Jetty, wall, riprap and dredging.	47,325 48	1,000 00	48,318 92
Kings Beach, Swampscott . . .	Removal of obstruction.	166 41	—	166 41
Lake Anthony, Oak Bluffs . . .	Jetties and dredging .	63,354 22	2,000 00	62,145 18
Lake Quannapowitt, Wakefield	Investigation . . . .	1,004 21	—	345 32
Lewis Bay, Barnstable . . . .	Survey and dredging	29,211 64	—	28,963 21
Little Harbor, Marblehead . .	Dredging . . . .	8,666 16	2,500 00	11,166 16
Little River, Gloucester . . .	Survey . . . .	862 93	—	862 93
Lobster Cove, Gloucester . . .	Dredging . . . .	33,047 26	1,500 00	34,547 26
Lynn Harbor, anchorage basin	Survey and dredging	121,789 29	5,200 00	121,588 07
Lynn Harbor and Saugus River	Dredging and filling .	90,942 35	37,500 00	128,442 35
Manchester Harbor . . . .	Survey, jetties and dredging.	68,100 67	43,500 00	109,078 51

<sup>1</sup> Expended by United States government.



APPROPRIATIONS, ETC. — *Continued.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Menamsha Inlet, Chilmark and Gay Head.	Jetties, dredging and sea wall.	\$63,423 34	\$700 00	\$64,019 69
Merrimack River . . . .	Investigation and survey.	1,308 50	—	1,208 50
Mill River, Gloucester . . .	Survey and dredging .	24,632 86	300 00	24,899 59
Mitchells River, Chatham . .	Survey . . . .	322 96	—	322 96
Nantucket Harbor . . . .	Dredging . . . .	42,058 63	1,000 00	42,779 78
New Bedford Harbor . . . .	Dredging . . . .	1,409 76	—	1,409 76
New Bedford Harbor . . . .	Pier, shed and dredging.	371,899 77	13,446 74 <sup>1</sup>	385,346 51
New Bedford State pier . . .	Improvement of . .	73,461 00	—	73,436 38
New Bedford State pier . . .	Operation and maintenance.	43,274 33	—	43,259 82
Newburyport Harbor . . . .	Survey . . . .	115 97	—	115 97
Nobscusset Harbor, Dennis . .	Breakwater, dredging and riprap.	31,874 49	1,200 00	23,713 94
North River, Marshfield . . .	Surveys and removing rocks.	6,858 75	1,800 00	8,658 75
North River, Salem . . . .	Survey . . . .	704 52	—	704 52
Oak Bluffs . . . . .	Removing rocks . .	632 45	—	594 95
Oak Bluffs . . . . .	Sea wall . . . .	19,542 11	2,500 00	22,042 11
Onset Bay, Wareham . . . .	Survey and dredging	14,295 89	1,000 00	15,295 89
Orleans . . . . .	Survey . . . .	104 18	—	104 18
Pamet River, Truro . . . .	Survey, dredging and repairing jetties.	191,096 80	1,200 00	192,296 80
Paskamansett River, Dartmouth.	Dredging and jetty .	5,227 68	—	5,227 68
Penikese Island, Gosnold . . .	Pile wharf and survey	5,300 00	—	5,192 95
Plum Island River, Newbury and Newburyport.	Survey . . . .	983 31	—	983 31
Plymouth Harbor . . . .	Dredging . . . .	176,214 99	71,794 55	221,507 27 <sup>2</sup>
Popponeset Bay . . . .	Dredging . . . .	46,252 33	—	46,252 33
Powow River . . . . .	Dredging channel and riprapping wall.	502 94	—	502 94
Province Lands, Provincetown	Reclamation . . .	88,000 00	—	85,129 97
Provincetown Harbor . . . .	Survey . . . .	1,217 78	—	1,217 78
Quansett Harbor, Orleans . . .	Survey . . . .	195 88	—	194 50
Quicks Hole, Gosnold . . . .	Survey . . . .	500 00	—	—
Red Brook Harbor, Bourne . . .	Removing pier . . .	275 00	—	275 00
Revere . . . . .	Stone breakwater .	60,407 09	—	60,397 93
Rock Harbor, Orleans . . . .	Dredging . . . .	12,108 25	400 00	12,492 71
Rockport Harbor . . . .	Dredging and removing rocks.	14,429 32	—	13,749 02
Salem Harbor . . . . .	Survey . . . .	3,050 05	—	1,050 05

<sup>1</sup> Paid by surety company.<sup>2</sup> \$57,000 expended under direction of United States government.

APPROPRIATIONS, ETC. — *Concluded.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Salt Pond River, Eastham .	Survey . . .	\$210 11	—	\$210 11
Salters Point, Dartmouth .	Breakwater . .	13,509 59	\$1,500 00	15,009 59
Sandwich Harbor . . .	Dredging channel, riprap and jetties.	80,579 84	—	80,579 84
Saugus River, Lynn and Saugus	Survey and dredging	19,206 64	2,000 00	20,845 17
Scituate . . . . .	Sea wall and riprap .	63,522 48	7,235 00	69,652 61
Scituate Harbor . . . .	Dredging . . . .	96,663 92	8,300 00	104,963 92
Scorton Harbor, Sandwich .	Jetty and dredging .	19,426 39	500 00	17,774 34
Sesuit Harbor, Dennis . .	Jetty . . . . .	28,067 85	1,500 00	24,555 10
Sippican Harbor, Marion .	Survey . . . . .	7 17	—	7 17
Smith's Cove, Gloucester .	Survey and dredging	5,163 07	—	5,163 02
South River, Salem . . .	Dredging . . . .	10,523 65	3,000 00	13,462 66
South Watuppa Pond, Fall River.	Fenders and excavation.	203 42	—	203 42
Stage Harbor, Chatham . .	Dikes and survey .	10,803 01	—	10,803 01
Taunton River . . . . .	Survey and investigation.	5,532 99	—	1,960 51
Taunton-Brockton waterway .	Investigation . . .	5,388 46	—	5,278 18
Taunton River-Boston Harbor Canal.	Survey . . . . .	10,000 00	—	9,932 75
Taunton River-Massachusetts Bay Canal.	Survey . . . . .	11,786 71	—	11,786 71
Vineyard Haven Harbor . .	Repairing sea wall .	9,210 06	2,380 50	11,590 56
Vineyard Haven Harbor, Tisbury.	Breakwater and dredging.	45,089 48	1,000 00	45,518 25
Waquoit Bay, Falmouth . .	Breakwater wall and bulkhead.	29,583 79	2,000 00	31,285 40
Wareham River . . . . .	Survey and dredging	37,349 27	5,000 00	42,349 27
Warrens Cove, Plymouth .	Sea wall . . . . .	14,468 97	9,713 98	24,481 22
Watch Hill, Chatham . . .	Survey and riprap .	15,020 47	—	14,968 75
Wellfleet Harbor . . . . .	Survey and dredging	16,867 22	1,500 00	17,600 29
West Bay, Barnstable . . .	Jetties and dredging .	59,281 84	10,000 00	59,244 47
West Falmouth Harbor, Falmouth.	Dredging . . . . .	25,655 31	—	24,386 18
West Harwich . . . . .	Survey . . . . .	9 00	—	9 00
Westfield River . . . . .	Survey, jetties . . .	6,296 90	—	6,037 29
Wild Harbor, Falmouth . .	Jetty and dredging .	15,671 59	5,000 00	15,614 72
Winthrop shore . . . . .	Sea walls and protective work.	17,021 51	3,000 00	20,021 51
Witchmere Harbor, Harwich .	Jetties and dredging	28,912 11	1,000 00	29,769 41
Woods Hole, Great Harbor, Falmouth.	Dredging . . . . .	5,468 86	1,500 00	6,968 86
Wrecks . . . . .	Removal from tide-water.	65,816 66	—	7,005 08
Yarmouthport Harbor . . .	Survey . . . . .	83,977 37	7,000 00	90,977 37
		\$4,404,052 06	\$446,201 46	\$4,316,557 56

## FEDERAL APPROPRIATIONS AND EXPENDITURES.

Federal appropriations and expenditures for improvement of rivers and harbors in Massachusetts from the establishment of the government to the close of the fiscal year ending June 30, 1920, as shown in the following tables, furnished by the Chief of Engineers, U. S. A.:—

TABLE NO. 1. — *Localities at Present under Improvement.*

[Compiled from the annual report of the Chief of Engineers, U. S. A., for the fiscal year ending June 30, 1920.]

LOCALITY.	Expenditures.	Appropriations.
Newburyport Harbor . . . . .	\$494,059 85	\$494,100 00
Merrimack River . . . . .	404,388 92	414,466 72 <sup>1</sup>
Sandy Bay, Cape Ann, harbor of refuge . . . . .	1,941,478 00	1,950,000 00
Gloucester Harbor . . . . .	538,183 00	542,083 00
Beverly Harbor . . . . .	49,125 00	110,625 00
Salem Harbor . . . . .	71,368 66	71,368 66 <sup>2</sup>
Lynn Harbor . . . . .	471,000 77	476,837 00
Mystic River (upper portion) <sup>3</sup> . . . . .	305,031 34	336,050 00
Mystic River (below mouth of Island End River) <sup>3</sup> . . . . .		
Malden River . . . . .	71,285 18	149,950 00
Boston Harbor <sup>4</sup> . . . . .	12,572,068 13	12,675,827 58
Dorchester Bay and Neponset River . . . . .	95,008 00	95,233 00
Weymouth Fore River . . . . .	439,569 05	573,750 00
Weymouth Back River . . . . .	26,500 00	27,000 00
Plymouth Harbor . . . . .	363,868 69	391,959 80
Provincetown Harbor . . . . .	348,062 72	362,162 97
Pollock Rip Shoals, Nantucket Sound . . . . .	443,785 22	665,000 00
Nantucket Harbor of refuge . . . . .	574,797 95	586,473 50
New Bedford and Fairhaven Harbors . . . . .	769,310 00	769,310 00
Taunton River . . . . .	201,888 76	210,189 18
Fall River Harbor . . . . .	380,911 49	380,911 49
Totals . . . . .	\$20,561,690 73	\$21,283,297 90

<sup>1</sup> Of original amount appropriated, \$900 was carried to the surplus fund of the treasury from previous project.

<sup>2</sup> Of original amount appropriated, \$1,131.34 was carried to the surplus fund of the treasury.

<sup>3</sup> Now consolidated as one improvement.

<sup>4</sup> Including Chelsea Creek.



TABLE NO. 2. — *Localities in which Work is not now in Progress.*

[Compiled from data furnished by the United States Treasury Department and the Chief of Engineers, U. S. A.]

LOCALITY.	Expenditures.	Appropriations.
Bass River . . . . .	\$20,150 34	\$20,150 41
Buzzards Bay Harbor . . . . .	2,500 00	2,500 00
Canapitset Channel . . . . .	5,312 54	9,800 00
Chatham Harbor . . . . .	12,171 36	13,732 79
Cohasset Harbor . . . . .	10,000 00	10,000 00
Duxbury Harbor . . . . .	37,000 00	37,000 00
East Dennis Breakwater . . . . .	7 57	1,500 00
Edgartown Harbor . . . . .	25,000 00	25,000 00
Essex River . . . . .	30,000 00	30,000 00
Hingham Harbor . . . . .	38,316 58	39,000 00
Hyannis Harbor . . . . .	221,787 75	221,267 07
Ipswich River . . . . .	5,617 91	7,500 00
Kingston Harbor . . . . .	8,940 09	10,000 00
Little Harbor, Woods Hole . . . . .	18,000 00	18,000 00
Manchester Harbor . . . . .	23,985 57	24,300 00
Marblehead Harbor . . . . .	833 42	1,900 00
Marthas Vineyard Harbor . . . . .	7,000 00	7,000 00
Powow River . . . . .	50,940 72	51,000 00
Rockport Harbor . . . . .	91,229 25	91,232 57
Seituate Harbor . . . . .	104,590 98	104,680 00
Town River . . . . .	37,577 41	37,577 41
Vineyard Haven Harbor . . . . .	55,387 35	60,000 00
Wareham Harbor . . . . .	95,997 30	96,236 00
Wellfleet Harbor . . . . .	11,365 57	16,000 00
Westport Harbor and River . . . . .	3,000 00	3,000 00
Winthrop Harbor . . . . .	9,000 00	9,000 00
Woods Hole Channel . . . . .	343,599 92	344,000 00
Totals . . . . .	\$1,269,311 63	\$1,291,376 25

RECAPITULATION.	Expenditures.	Appropriations.
Total of Table No. 1 . . . . .	\$20,561,690 73	\$21,283,297 90
Total of Table No. 2 . . . . .	1,269,311 63	1,291,376 25
Grand totals . . . . .	\$21,831,002 36	\$22,574,674 15

EXPENDITURES ON BOSTON HARBOR AND ITS TRIBUTARIES TO  
JUNE 30, 1920.

[The tributaries given are those now under improvement, and do not include tributaries heretofore improved.]

LOCALITY.	Expenditures.	Appropriations.
Boston Harbor proper <sup>1</sup> . . . . .	\$12,572,068 13	\$12,675,827 58
Mystic River (below mouth of Island End River) <sup>2</sup> . . . . .	305,031 34	336,050 00
Mystic River (upper portion) <sup>2</sup> . . . . .		
Malden River . . . . .	71,285 18	149,950 00
Totals . . . . .	\$12,948,384 65	\$13,161,827 58

<sup>1</sup> Including Chelsea Creek.

<sup>2</sup> Now one improvement.

## CONTRACTS AWARDED BY THE DIRECTORS OF THE PORT OF BOSTON

Contract No.	Work.	Contractor.	Date.
51	Reclamation of flats at East Boston	Atlantic, Gulf and Pacific Company.	Mar. 14, 1916

## CONTRACTS MADE BY THE COMMISSION ON WATERWAYS AND PUBLIC

Contract No.	Work.	Contractor.	Date.
9	Extension of contract No. 51 (Directors of the Port of Boston) for dredging and filling at East Boston.	Atlantic, Gulf and Pacific Company.	Oct. 6, 1916
31	Houghs Neck, Quincy, sea wall . . .	Dennis F. Crowley . . .	Sept. 18, 1917
75	Dry Dock Avenue, South Boston, paving.	Coleman Brothers . . .	May 12, 1919
78	Gloucester Harbor, dredging . . .	Boston Dredging Company . .	July 28, 1919
80	Popponesset Bay and West Bay, dredging.	John R. Burke . . . . .	June 16, 1919
86	Lynn Harbor and Saugus River, dredging.	Bay State Dredging and Contracting Company.	July 28, 1919
88	East Boston, bulkhead . . . . .	W. S. Rendle . . . . .	Sept. 3, 1919
91	Dry Dock, South Boston, dredging approach.	Boston Dredging Company . .	Aug. 20, 1919
93	Weir River, Boston Harbor, dredging.	Bay State Dredging and Contracting Company.	Sept. 15, 1919
95	Orient Heights, East Boston, dredging.	Gerrish Dredging Company . .	Oct. 3, 1919
96	Waquoit Bay, Falmouth and Mashpee, repairing breakwater.	E. S. Belden & Sons, Incorporated.	Oct. 29, 1919
97	South Boston, industrial tracks south of Summer Street.	J. F. Kennedy & Co. . . .	Nov. 24, 1919
98	New Bedford State Pier, fire sprinklers.	General Fire Extinguisher Company.	Nov. 26, 1919
99	New Bedford State pier, freight elevator.	F. S. Payne Company . . .	Nov. 26, 1919



## AND IN FORCE DURING THE YEAR ENDING NOV. 30, 1920.

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1920.	Total paid to Nov. 30, 1920.	Estimated Amount of Contract.
Completed Nov. 27, 1920.	15.47 cents per cubic yard . .	\$391,075 92	\$1,336,156 68	\$1,338,322 95 <sup>1</sup>

<sup>1</sup> Includes extension of original contract.

## LANDS AND IN FORCE DURING THE YEAR ENDING NOV. 30, 1920.

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1920.	Total paid to Nov. 30, 1920.	Estimated Amount of Contract.
Completed Nov. 27, 1920.	15.47 cents per cubic yard . .	-1	-1	-1
Completed June 19, 1920.	Unit prices . . . . .	\$12,510 81	\$17,950 81	\$14,576 50
Completed Dec. 13, 1919.	Unit prices . . . . .	45,154 31	173,929 13	149,103 00
In progress . .	Unit prices . . . . .	16,448 57	52,217 06	38,000 00
Completed Aug. 3, 1920.	For dredging, 63½ cents per cubic yard, measured <i>in situ</i> . For excavating boulders, \$12.50 per cubic yard.	15,395 36	32,484 92	35,000 00
Completed Dec. 4, 1919.	For dredging, 67 cents per cubic yard, scow measurement. For excavating boulders, \$20 per cubic yard.	13,874 73	67,132 66	30,150 00
Completed Dec. 20, 1919.	\$44.45 per linear foot of completed bulkhead.	23,778 60	72,364 60	71,120 00
Completed July 28, 1920.	For dredging, 65 cents per cubic yard, measured in scows.	25,331 35	136,528 60	130,000 00
Completed Nov. 27, 1920.	For dredging, 53 cents per cubic yard, measured in scows.	84,692 68	118,539 65	100,700 00
Completed Aug. 28, 1920.	For dredging, 33 cents per cubic yard, measured in place.	15,107 50	27,169 00	40,000 00
Completed June 7, 1920.	For furnishing and placing stone, \$7.50 per ton.	8,876 84	10,608 23	4,500 00
Completed May 21, 1920.	Unit prices . . . . .	9,181 63	9,181 63	9,275 25
Completed April 25, 1920.	For furnishing and installing sprinklers and fire extinguishing apparatus, \$6.921. For furnishing and installing a pipe connection, \$417. For furnishing additional sprinklers, \$5.50 per sprinkler.	7,523 51	7,523 51	7,338 00
Completed Sept. 17, 1920.	Lump sum of \$4,796 . . . .	4,796 00	4,796 00	4,796 00

<sup>1</sup> See contract No. 51.

CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION  
YEAR ENDING

Contract No.	WORK.	Contractor.	Date.
1	Mystic River, dredging at Island End River.	Bay State Dredging and Contracting Company.	Dec. 11, 1919
2	Mystic River, dredging at Malden bridge.	Boston Dredging Company .	Dec. 8, 1919
3	North Scituate, concrete sea wall .	William H. Connor . . .	Feb. 24, 1920
4	East Boston, filling back of bulk-head.	John R. Burke . . . .	Feb. 13, 1920
5	Dry Dock, South Boston, clearing entrance channel.	George T. Rendle Company .	April 9, 1920
6	Scituate Harbor, dredging . .	Bay State Dredging and Contracting Company.	May 24, 1920
7	East Bay, Barnstable, dredging .	Bay State Dredging and Contracting Company.	June 28, 1920
8	West Bay, Barnstable, dredging .	Bay State Dredging and Contracting Company.	July 1, 1920
9	Herring River, Witchmere Harbor, Bass River, redredging channels.	Bay State Dredging and Contracting Company.	June 3, 1920
10	Falmouth Inner Harbor, dredging .	Bay State Dredging and Contracting Company.	June 3, 1920
12	Haywards Creek, dredging and filling.	Bay State Dredging and Contracting Company.	May 10, 1920
13	Ellisville Harbor, Plymouth, excavating channel.	George A. Finney and P. H. Marsh.	May 10, 1920
14	Acushnet River, dredging . . .	Bay State Dredging and Contracting Company.	Aug. 2, 1920
15	East Boston, dredging at Jeffries Yacht Club.	Bay State Dredging and Contracting Company.	June 8, 1920
16	Bullock Street, South Boston, paving.	B. E. Grant Company . .	July 19, 1920
17	Winthrop Harbor, dredging . .	Bay State Dredging and Contracting Company.	Sept. 10, 1920

OF WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE  
Nov. 30, 1920.

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1920.	Total paid to Nov. 30, 1920.	Estimated Amount of Contract.
Completed March 30, 1920.	Dredging, 65 cents per cubic yard, measured in scows.	\$73,340 80	\$73,340 80	\$69,550 00
Completed July 1, 1920.	Dredging, 50 cents per cubic yard, measured in scows.	54,125 00	54,125 00	47,500 00
Completed Aug. 12, 1920.	For furnishing materials and building wall, \$14 per cubic yard of concrete measured in place in completed work. For additional material for filling back of wall, \$2 per cubic yard of material in place.	14,730 33	14,730 33	10,120 00
Completed May 28, 1920.	\$22.90 per hour of work by the dredge.	13,224 75	13,224 75	20,000 00
Completed July 23, 1920.	Lump sum of \$12,600 . . . .	12,600 00	12,600 00	12,600 00
Completed July 20, 1920.	Dredging, 59.8 cents per cubic yard, measured in scows. Excavating boulders, \$20 per cubic yard.	30,030 95	30,030 95	29,900 00
Completed Oct. 22, 1920.	Dredging, 78 cents per cubic yard, measured in scows. Excavating boulders, \$20 per cubic yard.	42,017 65	42,017 65	36,660 00
In progress . . .	Dredging, 78 cents per cubic yard, measured in scows. Excavating boulders, \$20 per cubic yard.	7,397 75	7,397 75	31,200 00
Work at Bass River completed Aug. 3, 1920.	Dredging, \$1.20 per cubic yard, measured in scows. For excavating boulders, \$20 per cubic yard.	14,404 80	14,404 80	14,000 00
Completed July 9, 1920.	Dredging, 58 cents per cubic yard, measured in scows. Excavating boulders, \$12 per cubic yard.	9,368 74	9,368 74	9,280 00
Completed Aug. 13, 1920.	For material excavated by hydraulic dredge, 38 cents per cubic yard, measured by cross section in excavation. For material excavated by dipper dredge, 65 cents per cubic yard, measured in scows.	98,773 56	98,773 56	80,000 00
Completed July 31, 1920.	Lump sum of \$1,000 . . . .	1,000 00	1,000 00	1,000 00
In progress . . .	Dredging, 52 cents per cubic yard, measured in scows. Excavating boulders, \$16 per cubic yard.	72,596 56	72,596 56	112,320 00
Completed July 31, 1920.	Dredging, 50 cents per cubic yard, measured in scows.	1,728 50	1,728 50	1,800 00
Completed Dec. 1, 1920.	Unit prices . . . . .	45,727 87	45,727 87	52,345 00
In progress . . .	Dredging, 47.9 cents per cubic yard, scow measurement.	-	-	12,100 00



CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION  
YEAR ENDING

Contract No.	WORK.	Contractor.	Date.
18	Lobster Cove, Gloucester and Newburyport Harbor, dredging basins.	Bay State Dredging and Contracting Company.	Sept. 1, 1920
20	Brant Rock, Marshfield, spur jetties	William H. Connor . . . .	Sept. 10, 1920

OF WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE  
Nov. 30, 1920 — *Concluded.*

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1920.	Total paid to Nov. 30, 1920.	Estimated Amount of Contract.
Work at Lobster Cove completed Oct. 2, 1920.	Dredging at Lobster Cove, 65 cents per cubic yard, scow measurement. Excavating boulders at Lobster Cove, \$18 per cubic yard. Dredging at Newburyport Harbor, \$1.65 per cubic yard, scow measurement. Excavating boulders at Newburyport Harbor, \$18 per cubic yard.	\$14,931 15	\$14,931 15	\$15,000 00
Completed Oct. 25, 1920.	For furnishing materials and building jetties, \$21.50 per cubic yard of concrete measured in place in the completed work.	2,832 62	2,832 62	3,332 50

UNITED STATES GEOLOGICAL SURVEY IN CO-OPERATION WITH THE DEPARTMENT OF PUBLIC WORKS,  
DIVISION OF WATERWAYS AND PUBLIC LANDS, MASSACHUSETTS, 1920.

CONNECTICUT RIVER AT SUNDERLAND, MASS.

*Summary of Daily and Monthly Discharge for the Sixteen-year Period ending Sept. 30, 1920.*

[Drainage area, 8,000 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.				Run-off Depth in Inches (Average for Sixteen Years).		
	SECOND-FOET.		SECOND-FOET PER SQUARE MILE.		SECOND-FOET.		SECOND-FOET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR SIXTEEN YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.	Second- feet per Square Mile.	Second- feet per Square Mile.			
October .	60,500	2,200	7.56	.275	8,160	1,400	1.020	.175	21,200	1,830	2.65	.229	8,640	1.080	1.24
November .	71,000	2,720	8.88	.340	11,700	1,240	1.460	.155	27,800	2,050	3.48	.256	10,400	1.300	1.45
December .	51,300	5,600	6.41	.700	9,520	1,330	1.190	.166	21,400	2,810	2.68	.351	10,000	1.250	1.44
January .	61,700	3,300	7.71	.412	12,300	1,500	1.540	.188	23,000	2,730	2.88	.341	10,000	1.250	1.44
February .	70,200	2,300	8.78	.288	6,700	1,400	.838	.175	21,700	2,090	2.71	.261	8,550	1.070	1.12
March .	107,000	20,300	13.40	2.540	15,300	2,000	1.910	.250	40,200	8,960	5.02	1.120	20,400	2.550	2.94
April .	95,400	48,600	11.90	6.080	30,800	6,950	3.850	.869	59,100	21,900	7.39	2.740	39,600	4.950	5.52
May .	68,100	22,500	8.51	2.810	15,700	3,020	1.960	.378	31,700	11,000	3.96	1.380	23,500	2.940	3.39
June .	50,100	8,420	6.26	1.050	12,600	1,740	1.580	.218	26,400	4,400	3.30	.550	11,800	1.480	1.65
July .	65,300	4,400	8.16	.550	5,830	1,180	.729	.148	18,800	2,250	2.35	.281	6,390	.799	.92
August .	54,900	4,030	6.86	.504	7,180	1,060	.898	.132	17,600	2,580	2.20	.322	5,560	.695	.80
September .	42,300	2,720	5.29	.340	7,180	945	.898	.118	20,600	1,830	2.58	.229	5,910	.739	.82
The year	107,000	58,900	13.40	7.360	2,080	945	.260	.118	17,300	8,820	2.16	1.100	13,400	1.680	22.73



*Summary of Daily and Monthly Discharge for the Seven-year Period ending Sept. 30, 1920.*

[Drainage area, 362 square miles.]

## 79

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH CORRECTED FOR STORAGE IN SOMERSET RESERVOIR.				Run-off Depth in Inches for Seven Years).		
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		AVERAGE FOR SEVEN YEARS.						
	Highest	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.					
October . . . . .	5,400	257	14.90	.710	304	29	.840	.080	765	102	2.11	.282	513	1.42	1.64
November . . . . .	11,000	889	30.40	2.460	425	41	1.170	.113	1,540	210	4.25	.580	790	2.18	2.43
December . . . . .	4,880	304	13.50	.840	305	43	.843	.119	1,130	159	3.12	.439	673	1.86	2.14
January . . . . .	7,170	720	19.80	1.990	370	60	1.020	.166	1,380	139	3.81	.384	581	1.60	1.84
February . . . . .	12,100	750	33.40	2.070	340	50	.939	.138	1,520	130	4.20	.359	645	1.78	1.87
March . . . . .	14,000	1,060	38.70	2.930	540	122	1.490	.337	2,280	542	6.30	1.500	1,438	3.97	4.58
April . . . . .	15,700	6,000	43.40	16.600	1,250	383	3.450	1.060	4,430	1,700	12.20	4.700	2,821	7.79	8.69
May . . . . .	13,700	985	37.80	2.720	800	138	2.210	.381	2,160	451	5.97	1.250	1,327	3.67	4.23
June . . . . .	5,400	362	14.90	1.000	394	68	1.090	.188	994	126	2.75	.348	563	1.56	1.74
July . . . . .	12,200	425	33.70	1.170	305	46	.843	.127	1,700	113	4.70	.312	491	1.36	1.57
August . . . . .	7,020	659	19.40	1.820	283	64	.782	.177	1,270	105	3.51	.290	373	1.03	1.19
September . . . . .	3,500	451	9.67	1.250	254	30	.702	.083	843	65	2.33	.180	367	1.01	1.13
The year . . . . .	15,700	6,500	43.40	18.000	191	29	.528	.080	1,020	735	2.82	2.030	879	2.43	33.05

## FARMINGTON RIVER NEAR NEW BOSTON, MASS.

*Summary of Daily and Monthly Discharge for the Seven-year Period ending Sept. 30, 1920.*

[Drainage area, 92.7 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH. IN ANY YEAR.				AVERAGE FOR SEVEN YEARS.		Run-off Depth in Inches (Average for Seven Years).
	SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT PER SQUARE MILE.		Second- feet per Square Mile.		
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.				
October . . . . .	950	65	10.20	.701	4.6	7.0	.050	.076	136	19.9	1.47	.215	88.3	.953	1.10
November . . . . .	744	49	8.03	.529	74.0	12.0	.798	.130	209	27.0	2.25	.291	113.0	1.220	1.36
December . . . . .	1,060	60	11.40	.647	74.0	9.0	.798	.097	252	31.1	2.72	.335	126.0	1.360	1.57
January . . . . .	1,140	90	12.30	.971	131.0	9.0	1.410	.097	349	39.9	3.76	.431	165.0	1.780	2.05
February . . . . .	2,000	88	21.60	.949	112.0	9.0	1.210	.097	319	46.4	3.44	.501	158.0	1.700	1.79
March . . . . .	1,900	269	20.50	2.900	210.0	60.0	2.270	.647	534	100.0	5.76	1.080	320.0	3.450	3.98
April . . . . .	1,310	600	14.10	6.470	356.0	77.0	3.840	.831	646	195.0	6.97	2.100	418.0	4.510	5.03
May . . . . .	1,750	197	18.90	2.130	118.0	66.0	1.270	.712	411	115.0	4.43	1.240	207.0	2.230	2.57
June . . . . .	882	114	9.51	1.230	82.0	31.0	.885	.334	164	66.8	1.77	.721	108.0	1.170	1.30
July . . . . .	1,700	94	18.30	1.010	63.0	27.0	.680	.291	240	59.1	2.59	.638	107.0	1.150	1.33
August . . . . .	1,060	122	11.40	1.320	93.0	31.0	1.000	.334	188	88.0	2.03	.949	120.0	1.290	1.49
September . . . . .	758	122	8.18	1.320	55.0	9.6	.593	.104	132	57.9	1.42	.625	94.6	1.020	1.14
The year . . . . .	2,000	840	21.60	9.060	35.0	7.0	.378	.076	217	131.0	2.34	1.410	169.0	1.820	24.71

## HOUSATONIC RIVER AT FALLS VILLAGE, CONN.

## Summary of Daily and Monthly Discharge for the Eight-year Period, ending Sept. 30, 1920.

[Drainage area, 644 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Eight Years).
	SECOND-Feet.		SECOND-Feet PER SQUARE MILE.		SECOND-Feet.		SECOND-Feet PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR EIGHT YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.					
October . . . . .	4,510	169	7.00	.262	193	24	.300	.037	726	122	1.130	.189	431	.654	.75
November . . . . .	2,800	160	4.35	.248	632	29	.981	.045	1,240	117	1.930	.182	692	1.070	1.19
December . . . . .	5,670	157	8.80	.244	845	50	1.310	.078	1,730	131	2.690	.203	977	1.520	1.75
January . . . . .	4,770	450	7.41	.699	1,290	25	2.030	.039	2,300	248	3.570	.385	1,140	1.770	2.04
February . . . . .	5,850	340	9.08	.528	1,000	140	1.550	.217	2,030	267	3.150	.415	1,050	1.630	1.71
March . . . . .	8,520	2,760	13.20	4.290	1,850	135	2.870	.210	2,910	884	4.526	1.370	2,150	3.340	3.85
April . . . . .	6,720	2,850	10.40	4.430	2,750	432	4.270	.671	3,820	1,119	5.930	1.720	2,700	4.190	4.68
May . . . . .	3,430	920	5.33	1.430	1,120	325	1.740	.505	1,830	614	2.840	.953	1,270	1.970	2.27
June . . . . .	2,550	560	3.96	.870	280	96	.435	.149	1,030	332	1.600	.516	638	.991	1.11
July . . . . .	4,480	328	6.96	.509	340	50	.528	.078	1,430	193	2.220	.300	575	.893	1.03
August . . . . .	3,320	214	5.16	.332	529	40	.821	.062	1,320	157	2.050	.244	452	.702	.81
September . . . . .	1,780	252	2.76	.391	350	29	.543	.045	605	181	.939	.281	373	.579	.65
The year . . . . .	8,520	3,600	13.20	5.590	136	24	.211	.037	1,290	795	2.000	1.230	1,040	1.610	21.84



## HOUSATONIC RIVER AT GREAT BARRINGTON, MASS.

*Summary of Daily and Monthly Discharge for the Seven-year Period ending Sept. 30, 1920.*

[Drainage area, 280 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Seven Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR SEVEN YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.			
October . . . . .	1,580	165	5.64	.589	75	1.0	.268	.004	273	80.9	.975	.289	187	.668	.77
November . . . . .	1,730	195	6.18	.696	215	10.0	.768	.036	816	106.0	2.910	.379	323	1.150	1.28
December . . . . .	3,700	195	13.20	.696	250	17.0	.893	.061	842	112.0	3.010	.400	477	1.700	1.96
January . . . . .	3,140	380	11.20	1.360	340	21.0	1.210	.075	1,000	118.0	3.570	.421	451	1.610	1.86
February . . . . .	3,640	335	13.00	1.200	390	11.0	1.390	.039	954	208.0	3.410	.743	475	1.700	1.79
March . . . . .	5,070	980	18.10	3.500	600	58.0	2.140	.207	1,590	429.0	5.680	1.530	1,050	3.750	4.32
April . . . . .	4,300	1,810	15.40	6.460	1,420	130.0	5.070	.464	2,650	603.0	9.460	2.150	1,530	5.460	6.09
May . . . . .	2,470	420	8.82	1.500	540	97.0	1.930	.346	1,050	309.0	3.750	1.100	654	2.340	2.70
June . . . . .	1,130	240	4.04	.857	255	8.0	.911	.029	497	138.0	1.780	.493	308	1.100	1.23
July . . . . .	4,110	250	14.70	.893	150	2.6	.536	.009	755	143.0	2.700	.511	307	1.100	1.27
August . . . . .	1,340	190	4.79	.679	69	13.0	.246	.046	462	123.0	1.650	.439	204	.729	.84
September . . . . .	690	220	2.46	.786	75	15.0	.268	.054	269	129.0	.961	.461	193	.689	.77
The year . . . . .	5,070	2,470	18.10	8.820	48	1.0	.171	.004	695	382.0	2.480	1.360	514	1.840	24.88

## MILLERS RIVER AT IRVING, MASS.

## Summary of Daily and Monthly Discharge for the Six-year Period ending Sept. 30, 1920.

[Drainage area, 372 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Six Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR SIX YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.			
October . . . .	1,730	180	4.65	.484	90	27	.242	.073	.359	119.0	.965	.320	.696	.80	
November . . . .	2,100	190	5.65	.511	120	20	.323	.054	765	103.0	2.060	.277	.383	1.030	1.15
December . . . .	2,410	180	6.48	.484	360	9	.968	.024	774	82.5	2.080	.222	.492	1.320	1.52
January . . . .	1,870	300	5.03	.806	450	8	1.210	.022	922	178.0	2.480	.478	.544	1.460	1.68
February . . . .	3,850	280	10.30	.753	450	55	1.210	.148	1,010	165.0	2.720	.444	.566	1.520	1.60
March . . . .	5,500	1,100	14.80	2.960	610	86	1.640	.231	1,890	530.0	5.080	1.420	1,280	3.440	3.97
April . . . .	4,250	1,880	11.40	5.050	1,360	245	3.660	.659	2,770	695.0	7.450	1.870	1,560	4.180	4.66
May . . . .	3,470	1,200	9.33	3.230	535	162	1.440	.435	1,230	518.0	3.310	1.390	878	2.360	2.72
June . . . .	1,880	366	5.05	.984	435	85	1.170	.228	842	190.0	2.260	.511	.561	1.510	1.68
July . . . .	2,560	385	6.88	1.030	284	31	.763	.083	742	222.0	1.990	.597	.413	1.110	1.28
August . . . .	2,730	260	7.34	.699	209	14	.562	.038	843	150.0	2.270	.403	.375	1.010	1.16
September . . . .	1,340	395	3.60	1.060	116	22	.312	.059	465	230.0	1.250	.618	.311	.836	.93
The year . . . .	5,500	2,810	14.80	7.550	63	8	.169	.022	811	471.0	2.180	1.270	.634	1.700	23.15





## EAST BRANCH OF TULLY RIVER NEAR ATHOL, MASS.

*Summary of Daily and Monthly Discharge for the Four-year Period ending Sept. 30, 1920.*

[Drainage area, 50.2 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Four Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR FOUR YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.			
October . . .	425	80	8.47	1.590	27.0	10.0	.538	.199	50.5	26.40	1.010	.526	43.5	.867	1.00
November . . .	401	155	7.99	3.090	77.0	23.0	1.530	.458	143.0	53.90	2.850	1.070	85.7	1.710	1.91
December . . .	320	48	6.38	.956	47.0	23.0	.936	.458	131.0	35.50	2.610	.707	94.0	1.870	2.16
January . . .	218	34	4.34	.677	71.0	16.0	1.410	.319	128.0	22.90	2.550	.456	64.4	1.280	1.48
February . . .	202	27	4.02	.538	29.0	18.0	.578	.359	64.5	23.70	1.280	.472	44.4	.884	.93
March . . .	975	437	19.40	8.710	99.0	24.0	1.970	.478	293.0	191.00	5.840	3.800	237.0	4.720	5.44
April . . .	677	279	13.50	5.560	218.0	72.0	4.340	1.430	420.0	169.00	8.370	3.370	264.0	5.260	5.87
May . . .	465	165	9.26	3.290	67.0	35.0	1.330	.697	170.0	84.00	3.390	1.670	131.0	2.610	3.01
June . . .	282	79	5.62	1.570	51.0	9.8	1.020	.195	121.0	28.40	2.410	.566	72.0	1.430	1.60
July . . .	61	50	1.22	.996	12.0	6.1	.239	.122	31.2	14.00	.622	.279	23.6	.470	.54
August . . .	413	7	8.23	.139	10.0	2.2	.199	.044	84.8	4.64	1.690	.092	39.8	.793	.91
September . . .	320	59	6.38	1.180	12.0	3.8	.239	.076	59.2	24.10	1.180	.480	41.4	.825	.92
The year . . .	975	565	19.40	11.300	9.2	2.2	.183	.044	119.0	81.00	2.370	1.610	95.3	1.900	25.71

Moss Brook at Wendell Depot, Mass.  
Summary of Daily and Monthly Discharge for the Four-year Period ending Sept. 30, 1920.  
[Drainage area, 12.2 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Four Years).
	SECOND- FEET.		SECOND- FEET PER SQUARE MILE.		SECOND- FEET.		SECOND- FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR FOUR YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet. Square Mile.	Second- feet per Square Mile.			
October . . . . .	91	10.0	7.46	.820	3.4	1.9	.279	.156	10.00	5.24	.820	.430	7.22	.592	.68
November . . . . .	101	30.0	8.28	2.460	12.0	3.7	.984	.303	26.60	8.30	2.180	.680	14.70	1.200	1.34
December . . . . .	74	10.0	6.07	.820	8.0	4.0	.656	.328	28.90	6.97	2.370	.571	19.70	1.610	1.86
January . . . . .	52	8.5	4.26	.697	12.0	4.0	.984	.328	23.90	5.21	1.960	.427	13.40	1.100	1.27
February . . . . .	68	10.0	5.57	.820	8.2	4.0	.672	.328	18.00	7.92	1.480	.649	13.00	1.070	1.12
March . . . . .	190	106.0	15.60	8.690	30.0	7.1	2.460	.582	59.70	43.30	4.890	3.550	51.60	4.230	4.88
April . . . . .	162	72.0	13.30	5.900	56.0	20.0	4.590	1.640	91.40	38.60	7.490	3.160	55.50	4.550	5.08
May . . . . .	113	50.0	9.26	4.100	82.0	14.0	6.720	1.150	51.20	20.70	4.200	1.700	35.70	2.930	3.38
June . . . . .	102	17.0	8.36	1.390	14.0	1.9	1.150	.156	31.60	7.39	2.590	.606	19.50	1.600	1.78
July . . . . .	42	11.0	3.44	.902	3.2	1.4	.262	.115	11.20	3.27	.918	.268	7.23	.593	.68
August . . . . .	45	2.7	3.69	.221	2.2	.8	.180	.066	7.82	1.45	.641	.119	4.38	.359	.41
September . . . . .	87	19.0	7.13	1.560	2.9	1.1	.238	.090	8.46	3.41	.693	.280	6.25	.512	.57
The year . . . . .	190	106.0	15.60	8.690	2.0	.8	.164	.066	27.80	16.20	2.280	1.330	20.70	1.700	23.05

## PRIEST BROOK NEAR WINCHENDON, MASS.

*Summary of Daily and Monthly Discharge for the Three-year Period, 1916-17 and 1918-20.*

[Drainage area, 18.8 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH. IN ANY YEAR.						Run-off Depth in Inches (Average for Three Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET PER SQUARE MILE.		SECOND- feet per Square Mile.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.			
October . . . . .	54	37.0	2.87	1.970	12.0	2.5	.638	.133	21.4	8.70	1.140	.463	16.90	.899	1.04
November . . . . .	140	67.0	7.45	3.560	15.0	4.8	.798	.255	48.8	20.10	2.600	1.070	30.80	1.640	1.83
December . . . . .	131	71.0	6.97	3.780	13.0	9.7	.691	.516	56.0	30.10	2.980	1.600	40.00	2.130	2.46
January . . . . .	106	12.0	5.64	.638	16.0	4.4	.851	.234	36.9	6.70	1.960	.356	22.80	1.210	1.40
February . . . . .	54	10.0	2.87	.532	7.0	5.3	.372	.282	12.9	8.10	.686	.431	10.90	.579	.61
March . . . . .	500	299.0	26.60	15.900	33.0	7.9	1.760	.420	134.0	84.10	7.130	4.470	112.00	5.960	6.87
April . . . . .	309	150.0	16.40	7.980	78.0	26.0	4.150	1.380	179.0	67.00	9.520	3.560	107.00	5.690	6.35
May . . . . .	297	61.0	15.80	3.240	18.0	16.0	.957	.851	84.5	35.60	4.490	1.890	61.80	3.290	3.79
June . . . . .	122	33.0	6.49	1.760	20.0	2.7	1.060	.144	47.3	14.50	2.520	.771	33.10	1.760	1.96
July . . . . .	29	20.0	1.54	1.060	4.0	2.1	.213	.112	11.9	4.64	.633	.247	8.98	.478	.55
August . . . . .	206	2.5	11.0	.133	4.4	1.6	.234	.085	39.9	1.97	2.120	.105	23.90	1.270	1.46
September . . . . .	132	14.0	7.02	.745	2.8	2.2	.149	.117	22.3	7.27	1.190	.387	14.30	.761	.85
The year . . . . .	500	299.0	26.60	15.900	2.5	1.6	.133	.085	48.1	35.80	2.560	1.900	40.40	2.150	29.17



## SIP POND BROOK NEAR WINCHENDON, MASS.

*Summary of Daily and Monthly Discharge for the Four-year Period ending Sept. 30, 1920.*

[Drainage area, 18.8 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Four Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR FOUR YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.			
October . . . . .	72	19.0	3.83	1.010	10	4.2	.532	.223	21.8	9.19	1.16	.489	16.5	.878	1.01
November . . . . .	99	32.0	5.27	1.700	14	2.4	.745	.128	34.6	18.90	1.84	1.000	24.8	1.320	1.47
December . . . . .	91	30.0	4.84	1.600	12	6.4	.638	.340	37.4	18.50	1.99	.984	30.5	1.620	1.87
January . . . . .	74	24.0	3.94	1.280	14	8.0	.745	.426	35.4	13.50	1.88	.718	23.3	1.240	1.43
February . . . . .	80	22.0	4.26	1.170	7	3.0	.372	.160	20.2	10.00	1.07	.532	17.0	.904	.95
March . . . . .	300	140.0	16.00	7.450	30	5.0	1.600	.266	99.4	62.10	5.29	3.300	77.0	4.100	4.73
April . . . . .	249	107.0	13.20	5.690	92	3.0	4.890	.166	162.0	62.90	8.62	3.350	98.4	5.230	5.84
May . . . . .	327	55.0	17.40	2.930	28	14.0	1.490	.745	78.8	27.60	4.19	1.470	52.5	2.790	3.22
June . . . . .	86	49.0	4.57	2.610	21	2.8	1.120	.149	42.6	16.20	2.27	.862	27.8	1.480	1.65
July . . . . .	24	9.3	1.28	.495	10	1.9	.532	.101	17.7	5.66	9.41	.301	11.5	.612	.70
August . . . . .	176	3.5	9.36	.186	9	1.1	4.790	.058	43.5	1.96	2.31	.104	16.4	.872	1.00
September . . . . .	120	17.0	6.38	.904	10	1.9	.532	.101	26.1	7.60	1.39	.404	16.5	.878	.98
The year . . . . .	327	205.0	17.40	10.900	7	1.1	.372	.058	40.8	29.70	2.17	1.580	34.4	1.830	24.85

## QUABOAG RIVER AT WEST BRIMFIELD, MASS.

## Summary of Daily and Monthly Discharge for the Eight-year Period ending Sept. 30, 1920.

[Drainage area, 150 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.				Run-off Depth in Inches (Average for Eight Years).		
	SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR EIGHT YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet per Square Mile.	Second- feet per Square Mile.			
October . . . . .	265	67	1.77	.447	142	16	.947	.107	191	34.5	1.27	.230	94	.627	.72
November . . . . .	621	69	4.14	.460	181	13	1.210	.087	357	42.6	2.38	.284	131	.873	.97
December . . . . .	558	165	3.72	1.100	165	30	1.100	.200	370	61.0	2.47	.407	158	1.050	1.21
January . . . . .	1,020	165	6.80	1.100	226	18	1.510	.120	528	85.2	3.52	.568	249	1.660	1.91
February . . . . .	840	180	5.60	1.200	193	50	1.290	.333	433	134.0	2.89	.893	228	1.520	1.60
March . . . . .	1,890	620	12.60	4.130	485	54	3.230	.360	917	245.0	6.11	1.630	564	3.760	4.34
April . . . . .	1,350	246	9.00	1.640	576	120	3.840	.800	866	173.0	5.77	1.150	566	3.770	4.21
May . . . . .	726	148	4.84	.987	364	81	2.430	.540	529	115.0	3.53	.767	323	2.150	2.48
June . . . . .	656	113	4.37	.753	220	32	1.470	.213	368	63.4	2.45	.423	191	1.270	1.42
July . . . . .	620	77	4.13	.513	144	24	.960	.160	241	52.3	1.61	.349	132	.880	1.02
August . . . . .	455	70	3.03	.467	140	11	.933	.073	251	40.0	1.07	.267	115	.767	.88
September . . . . .	415	76	2.77	.507	110	14	.733	.093	275	45.0	1.83	.300	105	.700	.78
The year . . . . .	1,890	800	12.60	5.330	54	11	.360	.073	363	171.0	2.42	1.140	238	1.590	21.54

## SWIFT RIVER AT WEST WARE, MASS.

*Summary of Daily and Monthly Discharge for the Eight-year Period ending Sept. 30, 1920.*

[Drainage area, 186 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH. IN ANY YEAR.						Run-off Depth in Inches (Average for Eight Years).
	SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT.		SECOND-FOOT PER SQUARE MILE.		SECOND-FOOT PER SQUARE MILE.		AVERAGE FOR EIGHT YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet. Second- feet.	Second- feet per Square Mile.			
October . . . . .	336	59	1.81	.317	126	23	.677	.124	169	40.8	.909	.219	114	.613	.71
November . . . . .	930	81	5.00	.435	190	38	1.020	.204	412	57.0	2.220	.306	173	.930	1.04
December . . . . .	1,100	76	5.91	.409	240	42	1.290	.226	461	58.1	2.480	.312	237	1.270	1.46
January . . . . .	1,180	150	6.34	.806	241	36	1.300	.194	429	109.0	2.310	.586	269	1.450	1.67
February . . . . .	2,200	230	11.80	1.240	210	84	1.130	.452	488	171.0	2.620	.919	270	1.450	1.52
March . . . . .	2,300	895	12.40	4.810	560	143	3.010	.769	974	254.0	5.240	1.370	648	3.480	4.01
April . . . . .	1,770	825	9.52	4.440	620	132	3.330	.710	1,070	317.0	5.750	1.700	719	3.870	4.32
May . . . . .	1,100	461	6.24	2.480	440	106	2.370	.570	591	224.0	3.180	1.200	418	2.250	2.59
June . . . . .	930	109	5.00	.586	255	56	1.370	.301	436	78.5	2.340	.422	255	1.370	1.53
July . . . . .	925	86	4.97	.462	164	35	.882	.188	351	58.1	1.890	.312	179	.962	1.11
August . . . . .	1,800	79	9.68	.425	186	24	1.000	.129	545	42.3	2.930	.227	167	.898	1.04
September . . . . .	504	84	2.71	.452	144	28	.774	.151	244	53.0	1.310	.285	129	.694	.77
The year . . . . .	2,300	1,080	12.40	5.810	94	23	.505	.124	412	233.0	2.220	1.250	298	1.600	21.77



## TAUNTON RIVER AT TITICUT RAILROAD STATION, MASS.

*Summary of Daily and Monthly Discharge for the Period from March to September, 1920.*

[Drainage area, 185 square miles.]

MONTH.	MAXIMUM DAY.		MINIMUM DAY.		MEAN DAILY DISCHARGE.		Run-off Depth in Inches.
	Second-feet.	Second-feet per Square Mile.	Second-feet.	Second-feet per Square Mile.	Second-feet.	Second-feet per Square Mile.	
March . . .	4,000	21.600	250	1.350	1,730.0	9.350	10.78
April . . .	1,230	6.650	460	2.490	789.0	4.260	4.75
May . . .	1,320	7.140	316	1.710	665.0	3.590	4.14
June . . .	1,510	8.160	338	1.830	753.0	4.070	4.54
July . . .	361	1.950	100	.541	191.0	1.030	1.19
August . . .	272	1.470	45	.243	122.0	.659	.76
September . .	117	.632	42	.227	69.3	.375	.42

WARE RIVER AT GIBBS CROSSING, MASS.  
*Summary of Daily and Monthly Discharge for the Eight-year Period ending Sept. 30, 1920.*  
[Drainage area, 201 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.						Run-off Depth in Inches (Average for Eight Years).
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR EIGHT YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.					
October . . . . .	420	82	2.09	.408	96	6.0	.478	.030	170	30.0	.846	.149	109	.542	.63
November . . . . .	1,360	85	6.77	.423	206	6.6	1.020	.033	539	34.3	2.680	.171	181	.900	1.00
December . . . . .	1,230	174	6.12	.866	200	20.0	.995	.100	479	60.7	2.380	.302	246	1.220	1.41
January . . . . .	2,370	260	11.80	1.290	238	25.0	1.180	.124	430	109.0	2.140	.542	295	1.470	1.70
February . . . . .	2,230	255	11.10	1.270	193	37.0	.960	.184	525	175.0	2.610	.871	298	1.480	1.56
March . . . . .	2,700	669	13.40	3.330	450	89.0	2.240	.443	1,150	226.0	5.720	1.120	777	3.870	4.46
April . . . . .	2,240	598	11.10	2.980	718	72.0	3.570	.358	1,120	240.0	5.570	1.190	747	3.720	4.15
May . . . . .	1,380	239	6.87	1.190	325	29.0	1.620	.144	570	156.0	2.840	.776	430	2.140	2.47
June . . . . .	970	148	4.83	.736	245	11.0	1.220	.055	496	65.0	2.470	.323	247	1.230	1.37
July . . . . .	1,640	138	8.16	.687	108	15.0	.537	.075	393	66.4	1.960	.330	171	.851	.98
August . . . . .	1,370	130	6.82	.647	114	16.0	.567	.080	416	60.3	2.070	.300	141	.701	.81
September . . . . .	1,120	92	5.57	.458	108	8.1	.537	.040	315	41.8	1.570	.208	123	.612	.68
The year . . . . .	2,700	1,120	13.40	5.570	28	6.0	.139	.030	424	207.0	2.110	1.030	314	1.560	21.22

WESTFIELD RIVER AT KNIGHTVILLE, MASS.  
*Summary of Daily and Monthly Discharge for the Eleven-year Period ending Sept. 30, 1920.*  
 [Drainage area, 162 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.				Run-off Depth in Inches (Average for Eleven Years).		
	SECOND-Feet.		SECOND-Feet PER SQUARE MILE.		SECOND-Feet.		SECOND-Feet PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR ELEVEN YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet per Square Mile.	Second- feet per Square Mile.			
October . . . . .	2,720	33	16.80	.204	90	12	.556	.074	462	23.3	2.85	.144	145.0	.895	1.03
November . . . . .	2,330	82	14.40	.506	207	19	1.280	.117	476	54.4	2.94	.336	237.0	1.460	1.63
December . . . . .	2,280	157	14.10	.969	153	15	.949	.093	404	68.5	2.49	.423	245.0	1.510	1.74
January . . . . .	5,130	130	31.70	.802	245	45	1.510	.278	643	86.2	3.97	.532	336.0	2.070	2.39
February . . . . .	3,920	100	24.20	.617	192	27	1.190	.167	582	65.0	3.57	.401	282.0	1.620	1.70
March . . . . .	4,860	470	30.00	2.900	350	36	2.160	.222	200	259.0	7.41	1.600	736.0	4.540	5.23
April . . . . .	3,560	1,360	22.00	8.400	730	166	4.510	1.020	410	455.0	8.70	2.810	839.0	5.180	5.78
May . . . . .	5,050	395	31.20	2.440	210	67	1.300	.414	810	167.0	5.00	1.030	379.0	2.340	2.70
June . . . . .	2,140	104	13.20	.642	167	25	1.030	.154	533	60.9	3.29	.376	219.0	1.350	1.51
July . . . . .	1,920	41	11.90	.253	97	12	.599	.079	386	20.7	2.38	.128	106.0	.654	.75
August . . . . .	3,040	44	18.80	.272	116	4	.716	.025	498	15.7	3.07	.097	96.1	.593	.68
September . . . . .	910	55	5.62	.340	68	8	.420	.049	174	19.1	1.07	.118	83.3	.514	.57
The year . . . . .	5,130	1,780	31.70	11.000	62	4	.198	.025	379	174.0	2.34	1.070	307.0	1.890	25.68



## WESTFIELD RIVER NEAR WESTFIELD, MASS.

*Summary of Daily and Monthly Discharge for the Six-year Period ending Sept. 30, 1920.*

[Drainage area, 496 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH, CORRECTED FOR DIVERSION FROM WESTFIELD LITTLE RIVER.				Run-off Depth in Inches (Average for Six Years)		
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR SIX YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet.	Second- feet per Square Mile.			
October . . . . .	3,600	260	7.26	5.240	248	61	.500	.123	554	130	1.120	.262	338	.681	.79
November . . . . .	4,730	550	9.54	1.110	465	70	.938	.141	1,170	203	2.360	.409	554	1.120	1.25
December . . . . .	4,650	352	9.38	.710	495	40	.998	.081	1,050	223	2.120	.450	664	1.340	1.54
January . . . . .	6,000	580	12.10	1.170	520	140	1.050	.282	1,500	374	3.020	.754	805	1.620	1.87
February . . . . .	14,500	525	29.20	1.060	405	184	.817	.371	1,730	327	3.490	.659	875	1.760	1.85
March . . . . .	8,700	1,260	17.50	2.540	1,280	237	2.580	.478	2,730	736	5.500	1.480	1,798	3.620	4.17
April . . . . .	7,200	2,600	14.50	5.160	1,700	505	3.430	1.020	3,670	1,190	7.400	2.400	2,200	4.440	4.95
May . . . . .	11,600	1,300	23.40	2.620	762	188	1.540	.379	2,110	576	4.250	1.160	1,180	2.380	2.74
June . . . . .	6,560	405	13.20	.817	3,440	105	6.940	.212	1,340	250	2.700	.504	730	1.470	1.64
July . . . . .	8,200	415	16.50	.837	370	140	.746	.282	914	274	1.840	.552	510	1.030	1.19
August . . . . .	7,550	230	15.20	.464	268	110	.540	.222	1,190	183	2.400	.369	462	.931	1.07
September . . . . .	1,990	335	4.01	.675	236	120	.476	.242	484	204	.976	.411	357	.720	.80
The year . . . . .	14,500	4,900	29.20	.988	150	40	.302	.081	1,090	704	2.200	1.420	871	1.760	23.86

MIDDLE BRANCH OF WESTFIELD RIVER AT GOSS HEIGHTS, MASS.  
*Summary of Daily and Monthly Discharge for the Ten-year Period ending Sept. 30, 1920.*

[Drainage area, 53 square miles.]

MONTH.	MAXIMUM DAY FOR MONTH IN ANY YEAR.				MINIMUM DAY FOR MONTH IN ANY YEAR.				MEAN DAILY DISCHARGE FOR MONTH.				Run-off Depth in Inches (Average for Ten Years).		
	SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		SECOND-FEET.		SECOND-FEET PER SQUARE MILE.		IN ANY YEAR.		AVERAGE FOR TEN YEARS.				
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Second- feet. Second- feet per Square Mile.	Second- feet per Square Mile.			
October . . . . .	1,760	14.0	33.20	.264	24.0	-	.453	-	285.0	4.72	5.38	.089	55.9	1.060	1.22
November . . . . .	984	51.0	18.60	.962	48.0	2.0	.906	.038	179.0	12.20	3.38	.230	84.9	1.600	1.78
December . . . . .	1,040	30.0	19.60	.566	78.0	5.6	1.470	.106	159.0	18.00	3.60	.340	100.0	1.890	2.18
January . . . . .	965	41.0	18.20	.774	65.0	6.0	1.230	.113	211.0	20.20	3.98	.381	109.0	2.060	2.38
February . . . . .	1,810	50.0	34.20	.943	45.0	5.0	.849	.094	230.0	17.30	4.34	.326	92.1	1.740	1.83
March . . . . .	1,690	138.0	31.90	2.600	125.0	5.0	2.360	.094	413.0	60.50	7.80	1.140	245.0	4.620	5.33
April . . . . .	1,220	474.0	23.00	8.940	195.0	30.0	3.680	.566	445.0	122.00	8.40	2.300	289.0	5.450	6.08
May . . . . .	1,810	102.0	34.20	1.920	53.0	8.9	1.000	.168	251.0	41.00	4.74	.774	126.0	2.380	2.74
June . . . . .	877	9.4	16.50	.177	34.0	1.2	.642	.023	138.0	3.92	2.60	.074	57.5	1.080	1.20
July . . . . .	919	16.0	17.30	.302	18.0	-	.340	-	105.0	5.28	1.98	.100	27.6	.521	.60
August . . . . .	1,180	7.9	22.30	.149	13.0	.4	.245	.008	124.0	3.77	2.34	.071	28.0	.528	.61
September . . . . .	475	5.6	8.96	.106	15.0	.4	.283	.008	61.5	1.51	1.16	.028	24.2	.457	.51
The year . . . . .	1,810	880.0	34.20	16.600	7.5	-	.142	-	148.0	71.70	2.80	1.350	103.0	1.940	26.46





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# INDEX.

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The Commonwealth of Massachusetts

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ANNUAL REPORT

OF THE

DEPARTMENT OF PUBLIC WORKS

FOR THE

YEAR ENDING NOVEMBER 30, 1921



BOSTON

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SUPERVISOR OF ADMINISTRATION.



# The Commonwealth of Massachusetts

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## DEPARTMENT OF PUBLIC WORKS.

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*To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts.*

Pursuant to the provisions of law, I have the honor as Commissioner of Public Works to submit the second annual report of the Department of Public Works for the fiscal year ending Nov. 30, 1921.

Chapter 350, General Acts of 1919, abolished the Massachusetts Highway Commission and the Commission on Waterways and Public Lands, and established the Department of Public Works, which was to be organized in two divisions, namely, a Division of Highways and a Division of Waterways and Public Lands, and made said Department the successor of said commissions.

Some of the provisions of chapter 350 aforesaid are now found in chapter 16, General Laws, which provides:—

SECTION 1. There shall be a department of public works, consisting of a division of highways and a division of waterways and public lands.

SECTION 2. The department shall be under the supervision and control of a commissioner of public works and four associate commissioners. Upon the expiration of the term of office of a commissioner or an associate commissioner, his successor shall be appointed for three years by the governor, with the advice and consent of the council. The commissioner shall receive such salary, not exceeding seventy-five hundred dollars, and the associate commissioners such salaries, not exceeding six thousand dollars, as the governor and council may determine. The commissioner and associate commissioners shall be allowed their actual traveling and other necessary expenses.

SECTION 3. Two of the associate commissioners shall be designated by the governor to have charge of the division of highways, and two to have charge of the division of waterways and public lands. Whenever a change in the associate commissioners occurs, the governor may make a new designation. The commissioner may act as a member of both divisions, and when present shall act as chairman of the division. The

concurrence of two members shall be necessary in any official act of either division.

SECTION 4. The commissioner shall be the executive and administrative head of the department. He shall approve all contracts made by either division, and may require any of the expenditures of either division to be submitted to him for approval. He may appoint, assign to divisions, transfer and remove such officials and employees as the work of the department may require, and fix their compensation.

SECTION 5. The commissioner shall appoint and may remove, subject to the approval of the governor and council, an official to be known as the registrar of motor vehicles, and may, with like approval, fix his compensation.

SECTION 6. Except as otherwise provided by sections thirty-one and forty-one of chapter ninety and section sixty of chapter one hundred and forty, all rules and regulations within the jurisdiction of the division of highways or the division of waterways and public lands shall be drafted by the associate commissioners having charge of said division, shall be submitted to the commissioner and associate commissioners sitting as a board, and shall take effect when approved by them, and at such time as they shall designate. Said board shall also have power to make all needful rules and regulations for carrying out the provisions of law relating to the department.

SECTION 7. The commissioner shall make an annual report containing, in addition to other matters required by law the following:

A list of the expenditures of the division of highways, with such statements relative to the construction and maintenance of public ways and such recommendations as to the general policy of the commonwealth relative thereto as it considers appropriate.

He shall also make an annual report containing, in addition to other matters required by law, a statement of the acts of the division of waterways and public lands.

The personnel during the year ending Nov. 30, 1921, was as follows: —

Commissioner of Public Works, JOHN N. COLE.

*Division of Highways.*

Associate Commissioner, FRANK D. KEMP.

Associate Commissioner, JAMES W. SYNAN.

*Division of Waterways and Public Lands.*

Associate Commissioner, JESSE B. BAXTER.

Associate Commissioner, RICHARD K. HALE.

Executive Secretary for the Department, FREDERICK N. WALES.

*Division of Highways.*

Chief Engineer, ARTHUR W. DEAN.

Construction Engineer, FRANKLIN C. PILLSBURY.

District Engineers: —

District No. 1, Berkshire County, GEORGE A. CURTIS.

District No. 2, Franklin and Hampshire counties, H. D. PHILLIPS.

District No. 3, Hampden and Worcester counties, JOHN A. JOHNSTON.

District No. 4, Middlesex County, F. D. SABIN.

District No. 5, Essex and Suffolk counties, D. H. DICKINSON.

District No. 6, Norfolk and Bristol counties, R. W. COBURN.

District No. 7, Plymouth, Barnstable, Dukes and Nantucket counties,  
GEORGE H. DELANO.

Recording Secretary for the Division, MARY A. RILEY.

Financial Secretary for the Division, FRED FAIR.

*Division of Waterways and Public Lands.*

Chief Engineer, FRANK W. HODGDON.

Assistant to the Chief Engineer, for Boston Harbor, JOHN N. FERGUSON.

Assistant to the Chief Engineer, for harbors and waterways outside Boston Harbor, FRANCIS L. SELLEW.

Recording Secretary for the Division, EDNA F. TOWNSEND.

Financial Secretary for the Division, CORA I. ALLEN.

Bridge Engineer for the Department, WILLIAM F. WILLIAMS.

*Registry of Motor Vehicles.*

Registrar, FRANK A. GOODWIN.

Chief Clerk, CHARLES R. GILLEY.

Chief of Inspection Force, ALBERT S. OLSSON.

A detailed report is presented herewith, covering the activities for the year of the Division of Highways, the Division of Waterways and Public Lands, and the Registry of Motor Vehicles.

JOHN N. COLE,  
*Commissioner.*





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DIVISION OF HIGHWAYS

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Illustrating safety lines in Sudbury.



## DIVISION OF HIGHWAYS.

### APPROPRIATIONS.

The appropriations for the construction and repair of State highways during the period 1903 to 1921, inclusive, were —

1903 . . . . .	\$2,250,000 00 <sup>1</sup>
1907 . . . . .	2,500,000 00 <sup>1</sup>
1912 . . . . .	5,000,000 00 <sup>1</sup>
1919 . . . . .	4,000,000 00 <sup>2</sup>

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Total . . . . .	\$13,750,000 00
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The total of such appropriations during the period 1894 to Nov. 30, 1921, inclusive, was \$18,250,000.

The appropriations for maintenance during the period 1914 to 1921, inclusive, paid from the treasury of the Commonwealth, were —

1914 . . . . .	\$350,000 00 <sup>3</sup>
1915 . . . . .	350,000 00 <sup>3</sup>
1916 . . . . .	415,000 00 <sup>3</sup>
1917 . . . . .	404,547 86 <sup>3</sup>
1918 . . . . .	258,462 80
1919 . . . . .	312,524 64
1920 . . . . .	358,889 44
1921 . . . . .	367,697 00

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Total . . . . .	\$2,817,121 74
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The total of such appropriations during the period 1903 to Nov. 30, 1921, inclusive, was \$4,331,288.40.

The appropriations made in 1921, and relating to the Department of Public Works, Division of Highways, are included in various items in chapters 203 and 502, Acts of 1921, which follow.

Chapter 203, Acts of 1921, making appropriations for the

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<sup>1</sup> To cover expense of construction for a period of five years.

<sup>2</sup> To cover expense of construction for a period of four years, 1920-23, inclusive.

<sup>3</sup> Includes appropriations for widening.



maintenance of departments, boards, commissions, institutions and certain activities of the Commonwealth, for interest, sinking fund and serial bond requirements, and for certain permanent improvements, is, in part, as follows:—

SERVICE OF THE DEPARTMENT OF PUBLIC WORKS.

Item

575	For the salaries of the commissioner and the four associate commissioners, a sum not exceeding thirty-one thousand five hundred dollars . . . . .	\$31,500 00
576	For personal services of clerks and assistants to the commissioner, a sum not exceeding twelve thousand eight hundred and fifty dollars . . . . .	12,850 00
576½	For traveling expenses of the commissioner, a sum not exceeding fifteen hundred dollars . . . . .	1,500 00
Total . . . . .		<u>\$45,850 00</u>

Division of Highways (the following appropriations for the operation and maintenance of this division, except as otherwise provided, are made from the receipts in the Motor Vehicle Fees Fund):

577	For the personal services of the chief engineer, engineers and office assistants, including certain clerks and stenographers, a sum not exceeding forty-seven thousand five hundred dollars . . . . .	\$47,500 00
578	For traveling expenses of the associate commissioners, when traveling in the discharge of their official duties, a sum not exceeding twenty-five hundred dollars . . . . .	2,500 00
579	For services other than personal, including printing the annual report and necessary office supplies and equipment, a sum not exceeding twelve thousand dollars . . . . .	12,000 00
580	For the care, repair and storage, replacement and purchase of road-building machinery and tools, a sum not exceeding three hundred thousand dollars . . . . .	300,000 00
581	For the suppression of gypsy and brown tail moths on state highways, a sum not exceeding fifteen thousand dollars . . . . .	15,000 00
582a	For the construction and repair of town and county ways, a sum not exceeding seven hundred thousand dollars . . . . .	700,000 00
582b	For aiding towns in the repair and improvement of public ways, a sum not exceeding four hundred thousand dollars . . . . .	400,000 00
582c	For the maintenance and repair of state highways, a sum not exceeding two million ten thousand five hundred dollars, of which sum three hundred sixty-seven thousand six hundred and ninety-seven dollars represents the receipts from assessments upon certain cities and towns for the maintenance of state highways, and the balance from receipts in the Motor Vehicle Fees Fund . . . . .	2,010,500 00
582d	For engineering service and expenses, a sum not exceeding two hundred thousand dollars . . . . .	200,000 00
583	For the maintenance and operation of the Newburyport bridge and the Brightman street bridge in Fall River, in accordance with the provisions of existing laws, a sum not exceeding twenty-nine thousand dollars . . . . .	29,000 00
Total . . . . .		<u>\$3,716,500 00</u>

## Item

## Registration of Motor Vehicles:

584	For personal services, a sum not exceeding three hundred thirty-two thousand five hundred dollars, from receipts in the Motor Vehicle Fees Fund . . . . .	\$332,500 00
585	For services other than personal, including traveling expenses, purchase of necessary supplies, equipment and materials, including cartage and storage of the same, and for work incidental to the registration and licensing of owners of motor vehicles, a sum not exceeding two hundred forty thousand dollars, from receipts in the Motor Vehicle Fees Fund . . . . .	240,000 00
Total . . . . .		<hr/> \$572,500 00

586	For the purpose of enabling the department of public works to secure federal aid for the construction of highways, a sum not exceeding one million dollars in addition to any other funds which the department has available for the purpose; of the said sum seven hundred fifty thousand dollars shall be payable from receipts in the Motor Vehicle Fees Fund, and the balance from receipts from counties for assessments on highways previously constructed, or from the general fund	\$1,000,000 00
587 <sup>1</sup>	For the care of snow on highways, as provided by section nineteen of chapter eighty-one of the General Laws, a sum not exceeding fifty thousand dollars, from receipts in the Motor Vehicle Fees Fund . . . . .	\$50,000 00
588 <sup>1</sup>	For administering the law relative to advertising signs near highways, a sum not exceeding fifteen thousand dollars, to be paid from the general fund . . . . .	\$15,000 00

## Division of Waterways and Public Lands:

589	For personal services of the chief engineer and assistants, a sum not exceeding fifty-nine thousand dollars, from receipts in the Port of Boston Fund . . . . .	\$59,000 00
590	For necessary traveling expenses of the associate commissioners, a sum not exceeding one thousand dollars . . . . .	1,000 00
591	For services other than personal, including printing and binding the annual report, and for necessary office and engineering supplies and equipment, a sum not exceeding eight thousand dollars . . . . .	8,000 00
592	For the care and maintenance of the Province lands, a sum not exceeding four thousand dollars . . . . .	4,000 00
593	For the maintenance of structures, and for repairing damages along the coast line or river banks of the commonwealth, and for the removal of wrecks and other obstructions from tide-waters and great ponds, and for gauging of streams in co-operation with the federal government, a sum not exceeding twenty-five thousand dollars . . . . .	25,000 00
594	For the improvement, development and protection of rivers and harbors, tidewaters and foreshores within the commonwealth, as provided by chapter two hundred and thirty-one of the General Acts of nineteen hundred and nineteen, and of great ponds, a sum not exceeding two hundred fifty thousand dollars . . . . .	250,000 00

<sup>1</sup> See reference to this item in 1921, 502, section 2, under item 28c.



## Item

595	For re-establishing and permanently marking certain triangular points and sections as required by order of the land court, in accordance with section thirty-three of chapter ninety-one of the General Laws, a sum not exceeding one thousand dollars . . . . .	\$1,000 00
597	For the supervision and operation of commonwealth pier five, including the salaries or other compensation of employees, and for the repair and replacement of equipment and other property, a sum not exceeding eighty-nine thousand dollars, from receipts in the Port of Boston Fund . . . . .	89,000 00
598	For the maintenance of pier one, at East Boston, a sum not exceeding fifteen thousand dollars, from receipts in the Port of Boston Fund . . . . .	15,000 00
599	For the maintenance and improvement of commonwealth property under the control of the division, a sum not exceeding fifty-five thousand dollars, from receipts in the Port of Boston Fund . . . . .	55,000 00
600	For the operation and maintenance of the New Bedford state pier, a sum not exceeding ten thousand dollars . . . . .	10,000 00
601	For the compensation of dumping inspectors, a sum not exceeding two thousand dollars, to be paid from the Waterways Fund . . . . .	2,000 00
601½	For the payment of money due contractors for work done and material furnished in the construction of the dry dock at South Boston and held by the commonwealth as retained percentages, the amount received from the federal government as the final payment in connection with the purchase of the dry dock and placed in the Port of Boston Fund, the sum of sixty thousand thirty-four dollars and twenty-two cents . . . . .	60,034 22
Total . . . . .		\$579,034 22

The following appropriations for special improvements are to be made from the Port of Boston Fund:

602	For dredging and filling upon property of the commonwealth, a sum not exceeding three hundred seventy thousand dollars, the same to be in addition to any sum heretofore appropriated for the purpose . . . . .	\$370,000 00
603	For improvements of the commonwealth pier at East Boston, a sum not exceeding four thousand dollars . . . . .	4,000 00
604	For dredging in and about minor channels in Boston harbor, a sum not exceeding eighty thousand dollars, the same to be in addition to any sum heretofore appropriated for the purpose . . . . .	80,000 00
605	For the construction of a pier and the improvement of land and flats near Hayward's creek in the city of Quincy and the town of Braintree, a sum not exceeding one hundred sixty thousand dollars . . . . .	160,000 00
606	For street and pier improvements and developments upon property of the commonwealth at South Boston, a sum not exceeding one hundred forty thousand dollars, the same to be in addition to any amount heretofore appropriated for the purpose . . . . .	140,000 00
Total . . . . .		\$754,000 00



Item	Deficiencies.	
Division of Highways:		
For the care, repair and storage, replacement and purchase of road-building machinery and tools, the sum of forty-seven dollars and thirty-eight cents . . . . .		\$47 38
For the maintenance of state highways and the improvement and construction of town ways and certain through routes, in accordance with the provisions of existing laws, and for the payment of any claims for damages occurring on state highways, with the approval of the attorney-general, the sum of two hundred sixty-eight dollars and twenty-nine cents . . . . .		268 29
For expenses on account of construction of state highways for the year 1917-1918, the sum of ninety-four dollars and forty-four cents . . . . .		94 44
Division of Waterways and Public Lands:		
For the maintenance and improvement of commonwealth property under the control of the division, the sum of forty-four hundred forty-one dollars and twenty cents . . . . .		\$4,441 20

Chapter 502, Acts of 1921, in addition to the general appropriation act making appropriations to supplement certain items contained therein, and for certain new activities and projects is, in part, as follows: —

SERVICE OF THE DEPARTMENT OF PUBLIC WORKS.

Item		
Registration of Motor Vehicles:		
584	For personal services, a sum not exceeding seventy-five hundred dollars, from receipts in the Motor Vehicle Fees Fund, the same to be in addition to any amount heretofore appropriated for the purpose . . . . .	\$7,500 00
585	For services other than personal, including traveling expenses, purchase of necessary supplies, equipment and materials, including cartage and storage of the same, and for work incidental to the registration and licensing of owners of motor vehicles, a sum not exceeding twenty-five hundred dollars, from the receipts in the Motor Vehicle Fees Fund, the same to be in addition to any amount heretofore appropriated for the purpose . . . . .	2,500 00
28c	Item five hundred and eighty-seven of chapter two hundred and three of the general appropriation act is hereby amended by striking out said item and inserting in place thereof the following: For the care of snow on highways, as provided by section eleven of chapter eighty-four of the General Laws, a sum not exceeding fifty thousand dollars, from receipts in the Motor Vehicle Fees Fund.	
Division of Waterways and Public Lands:		
607a	For making rail connections with the property of the commonwealth at East Boston, as authorized by chapter four hundred and ninety-four of the acts of the present year, a sum not exceeding one hundred thousand dollars, the same to be paid from the Port of Boston Fund . . . . .	\$100,000 00

## Item

607b For the State's part of the expense of establishing a public reservation at Good Harbor Beach in the city of Gloucester, a sum not exceeding five hundred dollars . . . . .	\$500 00
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SECTION 3. The treasurer and receiver-general is hereby authorized and directed to transfer the balance of forty-nine thousand one hundred twenty-three dollars and forty-three cents, remaining to the credit of a fund known as the Compensation Fund for Boston Harbor, to the Port of Boston Fund established by chapter six hundred and sixty-three of the acts of nineteen hundred and twelve.

## EXPENDITURES.

Summary of expenditures by the Division during the fiscal year ending Nov. 30, 1921:—

For construction of State highways, under chapter 81, General Laws . . . . .	\$2,047,865 85
For maintenance of State highways, from Motor Vehicle Fees Fund, under chapter 81, General Laws, section 13 . . . . .	2,265,377 23
For maintenance of State highways from revenue appro- priations, under chapter 81, General Laws, section 13 . . . . .	367,697 00
For maintenance and improvement of town and county ways, under chapter 90, General Laws, section 34 as amended . . . . .	765,303 76
For construction and repair of ways not State highways in certain towns, under chapter 81, General Laws, sec- tion 23 . . . . .	74,533 24
For highways in the five western counties, under General Acts of 1915, chapter 221 . . . . .	381,090 53
For repair and improvement of public ways, exclusive of State highways, in certain towns, under chapter 81, General Laws, sections 26-29, 31 and amendment . . . . .	361,523 95
For maintenance and improvement of public ways, ex- clusive of State highways, in certain towns, under Gen- eral Acts of 1918, chapter 155 . . . . .	20,318 27
For the construction and maintenance of a State highway in Hingham, under General Acts of 1916, chapter 213, and Acts of 1921, chapter 138 . . . . .	271 79
For the construction and improvement of the Holland Road in Holland and Brimfield, under Special Acts of 1919, chapter 232 . . . . .	2,096 58
For the construction and improvement of a highway be- tween Holden and the Wachusett Mountain State Res- ervation, under Special Acts of 1919, chapter 233 . . . . .	3,504 90
For the improvement of the highway between Westbor- ough and the village of North Grafton, under General Acts of 1919, chapter 335 . . . . .	4,000 00



For the construction and improvement of the highway from North Brookfield to New Braintree, under General Acts of 1919, chapter 336 . . . . .	\$193 25
For the further improvement of a highway in Hubbardston and Rutland, under General Acts of 1919, chapter 337 . . . . .	15,138 11
For the construction of a State highway in Holyoke, under General Acts of 1919, chapter 338 . . . . .	48,119 61
For the further improvement of a section of State highway in Dracut and Methuen, under General Acts of 1919, chapter 340 . . . . .	20,000 00
For the construction of a State highway in Norton, under General Acts of 1919, chapter 348 . . . . .	19,861 33
For the construction and improvement of the Clinton-West Boylston road, in Clinton, under Acts of 1920, chapter 520 . . . . .	29,661 03
For the construction and improvement of a highway in Holden, under Acts of 1920, chapter 521 . . . . .	19,306 53
For the construction and improvement of a highway in Templeton, under Acts of 1920, chapter 522 . . . . .	94 52
For the improvement of the main highway in Westborough, under Acts of 1920, chapter 536 . . . . .	14,000 00
For the construction and improvement of highway in Chester, Middlefield, Peru and Hinsdale, under Acts of 1920, chapter 566 . . . . .	5,971 13
For the construction of a highway in Blandford, Otis, Monterey and Great Barrington, under Acts of 1920, chapter 571 . . . . .	17,326 24
For the maintenance and operation of the bridge over Merimack River between Newburyport and Salisbury, under Acts of 1912, chapter 716 . . . . .	7,253 88
For the maintenance and operation of the bridge over Taunton Great River at Brightman Street in Fall River, under Acts of 1912, chapter 717 . . . . .	16,863 57
For State aid in keeping certain highways open during the winter months, under chapter 84, General Laws, section 11 . . . . .	47,333 83
For the regulation of advertising signs and devices within the public view, under chapter 93, General Laws, sections 29-33 . . . . .	6,175 72
For the suppression of gypsy and brown-tail moths and elm-leaf beetles on State highways . . . . .	15,000 00
For the care, repair and storage, replacement and purchase of road-building machinery and tools . . . . .	<sup>1</sup> 326,166 89
For general expenses, under Acts of 1921, chapter 203 . . . . .	60,880 15
Total . . . . .	\$6,962,928 89

<sup>1</sup> Includes first appropriation made in 1920.



CO-OPERATIVE WORK — SUPERVISION OF EXPENDITURES.

The Division has supervised the expenditures during the year by cities, towns and counties, under section 26 of chapter 81 of the General Laws, as amended by section 1 of chapter 120 of the Acts of 1921,<sup>1</sup> and under section 34 of chapter 90 of the General Laws, as amended by section 1 of chapter 112 of the Acts of 1921,<sup>2</sup> of approximately \$2,040,347 for co-operative work, in repairing, maintaining and improving certain public ways, and for other road work for which the towns and cities made contributions. All such work was carried out in conformity with contracts, specifications and plans approved by the Division.

PETITIONS, MEETINGS AND HEARINGS.

In addition to the regular weekly meetings of the Division throughout the year, numerous hearings and conferences have been held, including the annual meeting and hearing in the several counties in the Commonwealth, for the open discussion of questions relative to the public ways, as required by section 1 of chapter 81 of the General Laws; hearings on petitions for the relocation of street railway tracks in Andover, Swansea, Marion, Mattapoisett, Wareham, Lynn and Winchester; appeals from the action taken by the registrar of motor vehicles in the suspension or revocation of certain licenses to operate motor vehicles; and on the matter of outdoor advertising.

Petitions were received and contracts signed during the year, as follows: —

	Petitions.	Contracts.
State highways . . . . .	12	27
Work under section 34, chapter 90, General Laws, as amended	90	143
Work under section 26, chapter 81, General Laws, as amended	122	111
Work under special acts . . . . .	—	15
Totals . . . . .	224	296

<sup>1</sup> Printed on pages 86, 87.

<sup>2</sup> Printed on page 70.

GENERAL STATEMENT AS TO SURVEYS, PLANS, ESTIMATES  
AND OTHER WORK DURING THE YEAR.

*State Highways.* — During the year ending Nov. 30, 1921, the Division completed work on about 46.72 miles of State highway, portions of which were laid out in 1920. Construction was commenced, but not completed, on over 16 miles of road in 10 cities and towns. Layouts were made of 39.587 miles of State highway in 26 cities and towns. The total length of State highways at the end of the year was 1,393.548 miles.

*Surveys, Estimates and Designs.* — During the year preliminary surveys, plans and estimates were made on contemplated State highways in 50 towns covering a distance of 79 miles. Surveys, plans and estimates were made for resurfacing or reconstruction in 29 towns covering a distance of 44.37 miles. Lines and grades for construction work on State highways were made in 37 towns covering a distance of 68.55 miles, and for resurfacing and reconstruction in 19 towns for a distance of 22.80 miles. Final surveys were made on completed State highways in 34 towns for a distance of 63.93 miles, for resurfacing or reconstruction in 13 towns for a distance of 37.50 miles, and on roads other than State highways in 26 towns for a distance of 24.92 miles. Under section 23 of chapter 81 of the General Laws, and section 34 of chapter 90 of the General Laws as amended, and for roads to be constructed by the towns, surveys, plans and estimates have been made in 72 towns for a distance of 59.37 miles.

Lines and grades for construction have been made in 77 towns for a distance of 58.15 miles.

Under chapter 221, General Acts of 1915, and for work under special acts, surveys, plans and estimates have been made in 9 towns for a distance of 12.63 miles, and lines and grades for construction have been made in 11 towns for a distance of 18.06 miles.

Layout plans have been made in 26 towns covering a distance of 39.587 miles. Plans to accompany decrees for street railway locations on State highways have been made in 5 towns.



*Roads constructed in 1921.* — Construction has been completed on 47.72 miles of State highway, 2.30 miles of highways under the provisions of section 23 of chapter 81 of the General Laws, 85.75 miles of highways under the provisions of section 34 of chapter 90 of the General Laws, as amended, and 21.61 miles of highways under the provisions of special acts, making a total of 157.38 miles completed during the year.

Of the above roads completed this year, .97 of a mile was of water-bound macadam; 33.30 miles were of gravel; 15.10 miles were of bituminous concrete; 61.64 miles were of bituminous macadam; 3.94 miles were of water-bound macadam with an oil or tar surface applied; 6.18 miles were of reinforced concrete; 15.34 miles were of cement concrete; 19.67 miles were of gravel with an oil surface applied; and 1.13 miles were earth roads, that is, surfaced with the best available material; .11 of a mile was of granite block.

*Trees on State Highways.* — During the last seventeen years 45,607 trees have been planted on the borders of State highways, of which 887 were planted this year, the Division continuing its policy of planting quick-growing trees and hedges to replace guard rails.

*Permits.* — There were 1,117 permits issued during the year for opening or occupying State highways for various purposes.

*Resurfacing and Widening.* — During the year 3.85 miles of State highway were resurfaced without widening, 5.48 miles were widened but not resurfaced, and 20.13 miles were resurfaced and widened. These figures are for completed work. There is uncompleted work in various stages on a number of miles of road where the work will be completed next year.

*Engineering Advice to Municipal Authorities.* — The Division furnished, without charge, engineering advice to cities and towns in the Commonwealth, in accordance with the provisions of section 1 of chapter 81 of the General Laws.





Result of storm of Nov. 28, 1921, in Shrewsbury.



## STATE HIGHWAYS.

Chapter 81, General Laws, section 4, provides that —

If county commissioners, aldermen or selectmen adjudge that public necessity and convenience require that the commonwealth lay out and take charge of a new or existing way as a highway in whole or in part, in their county, city or town, they may apply, by a written petition, to the division, requesting that said way be laid out and taken charge of by the commonwealth.

The following petitions under chapter 81 aforesaid have been submitted during the year: —

SELECTMEN OF WOBURN. — Section of Salem Street from Pine Street to Beach Street. Received Feb. 24, 1921.

MAYOR AND ALDERMEN OF HAVERHILL. — Section of Broadway from North Broadway to the Methuen line. Received Feb. 25, 1921.

SELECTMEN OF LAKEVILLE. — Section from the Middleborough line to the State highway; section of Bedford Street to the Rochester line; and section of Lakeside Avenue from Bedford Street to the Freetown line. Received March 15, 1921.

SELECTMEN OF CANTON. — Section of Washington Street from the Milton line to the village of Ponkapoag. Received May 31, 1921.

MAYOR AND ALDERMEN OF WALTHAM. — Section of Lexington Street from Lake Street to the Lexington line. Received June 15, 1921.

SELECTMEN OF LANESBOROUGH. — Section of the Pittsfield-Williamstown road from the Pittsfield line to the New Ashford line. Received July 1, 1921.

SELECTMEN OF WILLIAMSTOWN. — Section of the River Road from the village of South Williamstown to the New Ashford line. Received July 1, 1921.

MAYOR AND ALDERMEN OF NORTH ADAMS. — Section of the Hodge Cross Road from Church Street to State Street. Received Sept. 13, 1921.

SELECTMEN OF WAREHAM. — Approach to new bridge over Cohasset Narrows. Received Sept. 13, 1921.

SELECTMEN OF BOURNE. — Approach to new bridge over Cohasset Narrows. Received Sept. 15, 1921.

SELECTMEN OF EGREMONT. — Section of Great Barrington road from the village of South Egremont to the Great Barrington line. Received Oct. 21, 1921.

MAYOR AND ALDERMEN OF HAVERHILL. — Section of Kenoza Street from the Amesbury road to Kenoza Avenue. Received Oct. 25, 1921.



The expenditures during the year in various counties for the construction of State highways were:—

COUNTY.	Amount.
Barnstable . . . . .	\$20,704 20
Berkshire . . . . .	66,319 16
Bristol . . . . .	41,488 11
Essex . . . . .	402,593 73
Franklin . . . . .	168,143 98
Hampshire . . . . .	310,626 95
Middlesex . . . . .	301,977 12
Norfolk . . . . .	68,397 61
Plymouth . . . . .	54,226 63
Suffolk . . . . .	3,221 82
Worcester . . . . .	610,166 54

Details of the foregoing expenditures follow:—

*Barnstable County.*

Barnstable . . . . .	\$12,475 11
Bourne . . . . .	67 88
Provincetown . . . . .	8,161 21

*Berkshire County.*

Dalton . . . . .	2,454 13
Egremont . . . . .	18,212 19
Hinsdale . . . . .	627 67
Lanesborough . . . . .	11,554 85
Sheffield . . . . .	446 99
Washington . . . . .	418 45
Windsor . . . . .	32,604 88

*Bristol County.*

Taunton . . . . .	41,488 11
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*Essex County.*

Andover . . . . .	4,602 97
Danvers . . . . .	17,164 88
Lynnfield . . . . .	119,008 86
Middleton . . . . .	68,883 83
North Andover . . . . .	702 03
Peabody . . . . .	114,086 96
Saugus . . . . .	76,394 34
Topsfield . . . . .	1,749 86

*Franklin County.*

Conway . . . . .	\$811 62
Deerfield . . . . .	300 78
Greenfield . . . . .	66,812 63
Shelburne . . . . .	100,218 95

*Hampshire County.*

Amherst . . . . .	541 88
Cummington . . . . .	172,471 54
Huntington . . . . .	76,290 80
Ware . . . . .	61,322 73

*Middlesex County.*

Ashby . . . . .	55,084 00
Billerica . . . . .	8,561 28
Groton . . . . .	155,475 70
Littleton . . . . .	43,859 89
Waltham . . . . .	30,695 84
Woburn . . . . .	8,300 41

*Norfolk County.*

Braintree . . . . .	23,464 12
Holbrook . . . . .	269 98
Quincy . . . . .	44,447 52
Wrentham . . . . .	215 99

*Plymouth County.*

Hingham . . . . .	29,487 48
Kingston . . . . .	612 73
Norwell . . . . .	24,126 42

*Suffolk County.*

Boston . . . . .	3,221 82
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*Worcester County.*

Barre . . . . .	5,580 08
Leicester . . . . .	79,689 97
Mendon . . . . .	35,759 36
Northbridge . . . . .	12,230 57
Oakham . . . . .	42 15
Oxford . . . . .	203,146 69
Shrewsbury . . . . .	5 56
Templeton . . . . .	45,265 49
Upton . . . . .	99,907 11
Uxbridge . . . . .	51,460 03
Westminster . . . . .	5 86
Winchendon . . . . .	77,073 67

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Total . . . . .	\$2,047,865 85
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## CONSTRUCTION AND RESURFACING OF STATE HIGHWAYS.

(Chapter 81, General Laws.)

The following contracts were entered into during the year for the construction and resurfacing of State highways in various municipalities: —

*Braintree.*

Feb. 23, 1921, contract made with the Norfolk County commissioners for the resurfacing of 260 feet of State highway on Quincy Avenue at the approach to the bridge over Monatiquot River, the surface consisting of bituminous macadam 26 feet wide. The proposal amounted to \$2,243.

Work completed July 19, 1921.

Expenditure during 1921, \$2,243.

*East Brookfield-Spencer.*

March 8, 1921, contract made with Hinman & Rudiger of Sturbridge for the surfacing of 2,245 feet of State highway in East Brookfield and 2,550 feet of State highway in Spencer, the surface consisting of bituminous macadam 20 feet wide. The proposal amounted to \$49,056.25.

Work completed Aug. 9, 1921.

Expenditure during 1921, \$58,600.46.

*Palmer.*

March 8, 1921, contract made with Willard C. Tannatt, Jr., of Easthampton for the surfacing of 9,479 feet of State highway, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$95,729.75.

Work completed Oct. 18, 1921.

Expenditure during 1921, \$100,009.61.

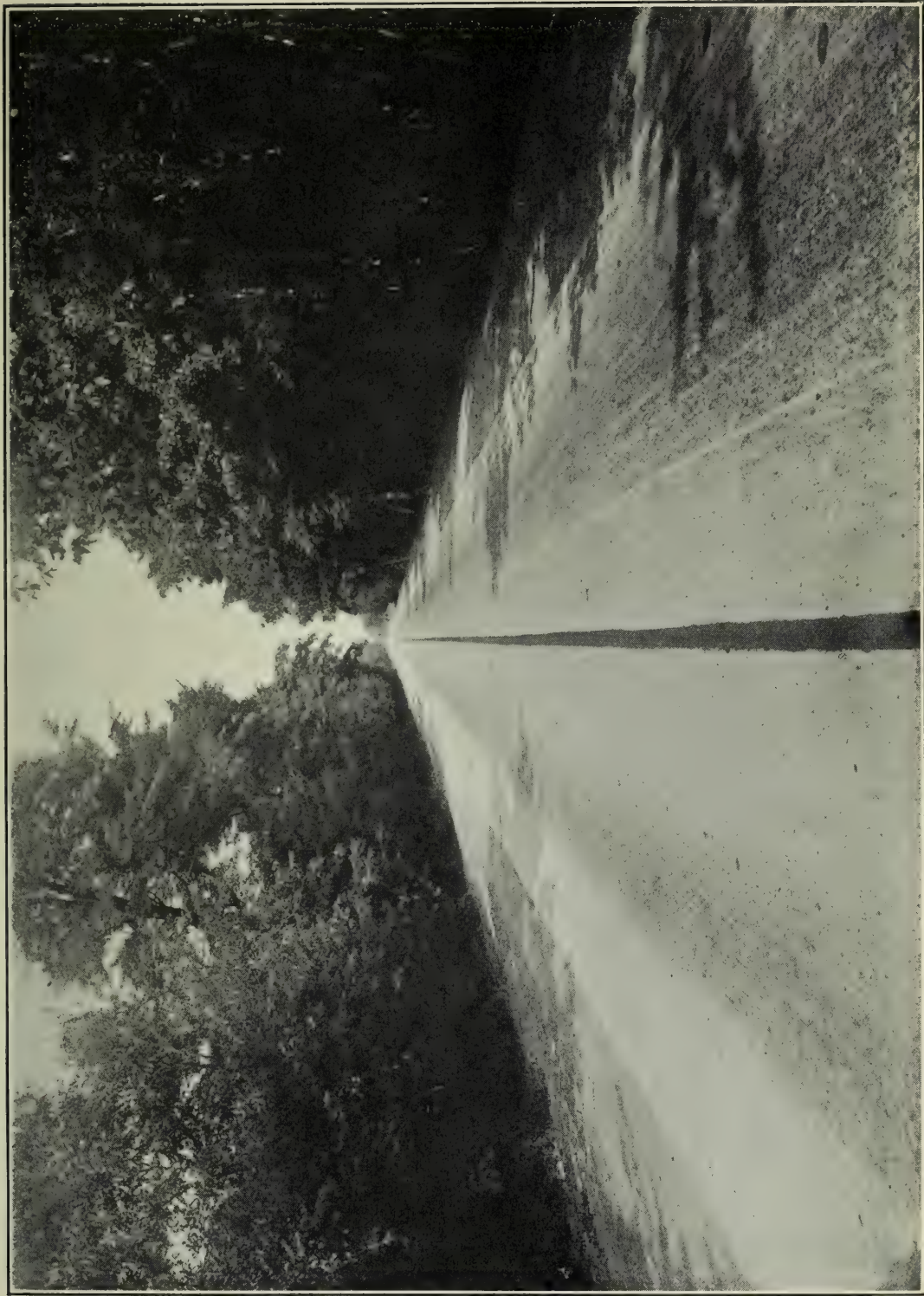
*East Brookfield.*

March 8, 1921, contract made with Carlo Bianchi & Co., Inc., of Framingham for the surfacing of 5,241 feet of State highway, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$49,755.

Work completed July 5, 1921.

Expenditure during 1921, \$56,679.





Concrete road in East Brookfield.



*Ashby.*

April 26, 1921, contract made with the Lane Construction Corporation of Meriden, Conn., for the construction of 6,602 feet of State highway, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$37,098.50.

Work completed Aug. 16, 1921.

Expenditure during 1921, \$44,638.05.

*Upton.*

May 3, 1921, contract with the R. H. Newell Company of Uxbridge for the construction of 8,830 feet of State highway, the surface consisting of bituminous concrete 18 feet wide. The proposal amounted to \$67,996.

Work completed Sept. 27, 1921.

Expenditure during 1921, \$80,945.62.

*Waltham.*

May 10, 1921, contract made with Samuel O. Hoyt of Holyoke for the construction of 5,025 feet of State highway, the surface consisting of bituminous macadam varying from 21 to 24 feet in width. The proposal amounted to \$44,057.

Work completed Aug. 23, 1921.

Expenditure during 1921, \$24,870.04.

*Quincy.*

May 24, 1921, contract made with A. G. Tomasello & Son of Boston for the construction of 2,950 feet of State highway, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$31,906.25.

Work completed Aug. 30, 1921.

Expenditure during 1921, \$36,011.77.

*Oxford.*

May 24, 1921, contract made with D'Onfro Brothers, Inc., of Leominster for the construction of 3.2 miles of State highway, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$138,038.15.

Work completed Oct. 25, 1921.

Expenditure during 1921, \$124,870.70.



*Andover.*

June 8, 1921, contract made with James H. Fannon of Somerville for the surfacing of 3,235 feet of State highway, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$14,980.

Work completed July 26, 1921.

Expenditure during 1921, \$14,728.07.

*Mendon-Uxbridge.*

June 8, 1921, contract made with J. H. Fannon of Somerville for the construction of 4,845 feet of State highway in Mendon and 5,500 feet of State highway in Uxbridge, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$109,088.25.

Work completed Nov. 22, 1921.

Expenditure during 1921, \$70,666.73.

*Leicester.*

June 8, 1921, contract made with Charles E. Horne of Millbury for the surfacing of 4,378 feet of State highway, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$61,058.

Work completed Dec. 20, 1921.

Expenditure during 1921, \$60,292.18.

*Stoughton.*

June 21, 1921, contract made with Carlo Bianchi & Co., Inc., of Framingham for the surfacing of 11,556 feet of State highway, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$95,364.25.

Work completed Nov. 29, 1921.

Expenditure during 1921, \$83,389.14.

*Lanesborough, New Ashford and Williamstown.*

June 21, 1921, contract made with the Rendle-Stoddard Company of Chelsea for the construction of the 12 reinforced concrete bridges on the State highway in Lanesborough, New Ashford and Williamstown. The proposal amounted to

\$42,005.50. On Sept. 22, 1921, said contractors were notified to discontinue all work under said contract, the chief engineer having certified in writing that the work called for by the contract had been unnecessarily and unreasonably delayed.

Expenditure during 1921, \$45,054.55.

*Watertown.*

June 28, 1921, contract made with Thomas J. McCue of Watertown for the surfacing of 4,486 feet of State highway, the surface consisting of bituminous macadam 27 feet wide. The proposal amounted to \$30,498.30.

Work completed Sept. 27, 1921.

Expenditure during 1921, \$37,432.60.

*Winchester and Woburn.*

July 5, 1921, contract made with Powers Brothers of Brockton for the surfacing of 3.042 miles of State highway, the surface consisting of bituminous macadam varying from 18 to 20 feet in width. The proposal amounted to \$106,098.10.

Work completed Dec. 30, 1921.

Expenditure during 1921, \$102,044.72.

*Middleton and Danvers.*

July 5, 1921, contract made with Fred E. Ellis of Melrose for the construction of 1.9 miles of State highway, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$70,969.50.

Work completed Dec. 20, 1921.

Expenditure during 1921, \$60,663.36.

*Brookfield and West Brookfield.*

July 19, 1921, contract made with the Middlesex Construction Company of Medford for the surfacing of 8,880 feet of State highway, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$101,555.90.

Work completed Nov. 22, 1921.

Expenditure during 1921, \$95,308.38.

*Winchendon and Templeton.*

July 19, 1921, contract made with the Lane Construction Corporation of Meriden, Conn., for the construction of 5.39 miles of State highway, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$209,028.50.

Work about half completed.

Expenditure during 1921, \$99,120.27.

*Littleton.*

Aug. 2, 1921, contract made with Thomas J. McCue of Watertown for the surfacing of 7,104 feet of State highway, the surface consisting of bituminous macadam 20 feet wide. The proposal amounted to \$62,813.20.

Work completed Nov. 15, 1921.

Expenditure during 1921, \$51,285.74.

*North Adams.*

Aug. 2, 1921, contract made with Fred T. Ley & Co., Inc., of Springfield for the surfacing of 8,650 feet of State highway, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$70,623.75.

Work completed Dec. 6, 1921.

Expenditure during 1921, \$69,144.11.

*Littleton.*

Aug. 16, 1921, contract made with Thomas J. McCue of Watertown for the surfacing of 8,596 feet of State highway, the surface consisting of bituminous macadam 20 feet wide. The proposal amounted to \$47,174.12.

Work completed Nov. 29, 1921.

Expenditure during 1921, \$52,311.39.

*Lynnfield.*

Aug. 23, 1921, contract made with the Hanscom Construction Company of Boston for the construction of 3,052 feet of State highway on Salem Street, the surface consisting of bitu-



minous macadam varying from 18 to 24 feet in width. The proposal amounted to \$45,941.50.

Work completed Jan. 10, 1922.

Expenditure during 1921, \$17,091.87.

*Egremont.*

Sept. 27, 1921, contract made with D. S. McGrath, Inc., of Adams for the construction of 4,328 feet of State highway, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$36,422.45.

Expenditure during 1921, \$5,321.10.

*Bernardston.*

Oct. 13, 1921, contract made with the Lane Construction Corporation of Meriden, Conn., for the construction of 1,750 feet of State highway, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$14,020.70.

Expenditure during 1921, \$951.79.

*Danvers and Topsfield.*

Nov. 1, 1921, contract made with Thomas J. McCue of Watertown for the construction of 15,889 feet of State highway in Danvers, and 18,547 feet of State highway in Topsfield, on the Newburyport Turnpike, the surface on 8,100 feet consisting of cement concrete 18 feet wide, and the surface on 26,336 feet consisting of bituminous macadam varying from 18 to 24 feet. The proposal amounted to \$273,523.90.

Expenditure during 1921, \$2,577.75.

*Boston.*

Nov. 1, 1921, contract made with J. C. Coleman & Sons of Boston for the construction of 1,412 feet of State highway on Washington Street in the West Roxbury district. This contract provides for the construction of two roadways, one roadway to be surfaced with bituminous concrete and the other with bituminous macadam. The proposal amounted to \$47,308.25.

Expenditure during 1921, \$2,610.35.

# MAINTENANCE OF STATE HIGHWAYS (FROM MOTOR VEHICLE FEES FUND).

Section 13 of chapter 81 of the General Laws provides: —

State highways shall be maintained and kept in good repair and condition by the division at the expense of the commonwealth. The division shall keep all state highways reasonably clear of brush, shall cause suitable shade trees to be planted thereon if practicable, and may establish and maintain watering troughs upon said highways.

The expenditures during the year in various counties were: —

COUNTY.	Amount.
Barnstable . . . . .	\$208,462 67
Berkshire . . . . .	261,881 50
Bristol . . . . .	43,610 49
Dukes . . . . .	28,357 57
Essex . . . . .	82,991 82
Franklin . . . . .	209,382 77
Hampden . . . . .	181,759 72
Hampshire . . . . .	48,005 84
Middlesex . . . . .	400,197 35
Nantucket . . . . .	3,326 44
Norfolk . . . . .	143,586 59
Plymouth . . . . .	82,514 58
Suffolk . . . . .	7,601 11
Worcester . . . . .	550,324 42

Details of the foregoing expenditures follow: —

<i>Barnstable County.</i>	
Barnstable . . . . .	\$6,372 14
Bourne . . . . .	11,507 40
Brewster . . . . .	3,372 14
Chatham . . . . .	4,243 24
Dennis . . . . .	2,340 56
Eastham . . . . .	40,349 21
Falmouth . . . . .	9,058 90
Harwich . . . . .	2,101 27
Mashpee . . . . .	2,378 85
Orleans . . . . .	1,638 90

Provincetown . . . . .	\$5,490 37
Sandwich . . . . .	3,217 85
Truro . . . . .	74,522 49
Wellfleet . . . . .	39,002 23
Yarmouth . . . . .	2,867 12

*Berkshire County.*

Adams . . . . .	1,003 33
Becket . . . . .	34,094 98
Cheshire . . . . .	7,382 37
Clarksburg . . . . .	4,435 05
Dalton . . . . .	2,920 15
Egremont . . . . .	4,103 25
Florida . . . . .	8,770 78
Great Barrington . . . . .	5,090 88
Hancock . . . . .	24,158 55
Hinsdale . . . . .	2,286 59
Lanesborough . . . . .	1,210 15
Lee . . . . .	8,565 23
Lenox . . . . .	9,956 43
New Ashford . . . . .	66 27
New Marlborough . . . . .	100 66
North Adams . . . . .	85,197 75
Pittsfield . . . . .	35,059 62
Richmond . . . . .	4,905 06
Savoy . . . . .	3,755 10
Sheffield . . . . .	5,943 85
Stockbridge . . . . .	2,987 69
Washington . . . . .	842 40
Williamstown . . . . .	8,055 10
Windsor . . . . .	990 26

*Bristol County.*

Acushnet . . . . .	1,342 45
Attleboro . . . . .	4,111 51
Berkley . . . . .	531 32
Dartmouth . . . . .	2,049 50
Dighton . . . . .	2,509 25
Easton . . . . .	59 16
Fairhaven . . . . .	1,483 93
Fall River . . . . .	44 47
Freetown . . . . .	1,401 44
Mansfield . . . . .	188 58
North Attleborough . . . . .	1,766 36
Norton . . . . .	1,258 51
Raynham . . . . .	2,495 20



Rehoboth . . . . .	\$5,000 84
Seekonk . . . . .	3,755 51
Somerset . . . . .	3,427 47
Swansea . . . . .	3,845 82
Taunton . . . . .	5,445 46
Westport . . . . .	2,893 71

*Dukes County.*

Chilmark . . . . .	16,414 87
Edgartown . . . . .	345 71
Gay Head . . . . .	1,435 18
Oak Bluffs . . . . .	279 88
Tisbury . . . . .	874 30
West Tisbury . . . . .	9,007 63

*Essex County.*

Amesbury . . . . .	1,692 10
Andover . . . . .	19,854 17
Beverly . . . . .	8,418 66
Danvers . . . . .	284 34
Essex . . . . .	1,985 20
Gloucester . . . . .	3,477 19
Groveland . . . . .	297 30
Hamilton . . . . .	1,062 58
Haverhill . . . . .	3,927 22
Ipswich . . . . .	3,701 02
Lawrence . . . . .	268 14
Lynn . . . . .	3,418 62
Lynnfield . . . . .	98 51
Merrimac . . . . .	2,449 32
Methuen . . . . .	2,277 54
Middleton . . . . .	1,437 78
Newbury . . . . .	4,539 30
Newburyport . . . . .	1,170 05
North Andover . . . . .	4,378 22
Rockport . . . . .	1,147 68
Rowley . . . . .	2,512 79
Salem . . . . .	2,702 63
Salisbury . . . . .	4,294 16
Saugus . . . . .	3,034 05
Swampscott . . . . .	891 78
Topsfield . . . . .	9 75
Wenham . . . . .	1,054 77
West Newbury . . . . .	2,606 95

*Franklin County.*

Ashfield . . . . .	\$1,259 77
Bernardston . . . . .	90,443 07
Buckland . . . . .	3,224 19
Charlemont . . . . .	13,999 71
Colrain . . . . .	1,389 70
Conway . . . . .	4,231 93
Deerfield . . . . .	6,190 15
Erving . . . . .	5,749 56
Gill . . . . .	10 83
Greenfield . . . . .	50,504 25
Montague . . . . .	12,136 35
Northfield . . . . .	3,472 09
Orange . . . . .	7,070 36
Shelburne . . . . .	5,720 06
Sunderland . . . . .	2,117 60
Whately . . . . .	1,863 15

*Hampden County.*

Agawam . . . . .	2,068 12
Blandford . . . . .	3,707 49
Brimfield . . . . .	3,235 04
Chester . . . . .	9,494 89
Chicopee . . . . .	4,581 86
East Longmeadow . . . . .	953 40
Holyoke . . . . .	2,608 99
Monson . . . . .	961 54
Palmer . . . . .	118,735 47
Russell . . . . .	8,873 36
Wales . . . . .	850 18
West Springfield . . . . .	3,025 41
Westfield . . . . .	16,846 29
Wilbraham . . . . .	5,817 68

*Hampshire County.*

Amherst . . . . .	4,311 37
Belchertown . . . . .	1,976 57
Cummington . . . . .	1,290 48
Easthampton . . . . .	1,045 37
Goshen . . . . .	1,773 79
Granby . . . . .	4,871 83
Hadley . . . . .	2,393 67
Hatfield . . . . .	1,500 15
Huntington . . . . .	8,280 09
Northampton . . . . .	1,945 92

South Hadley . . . . .	\$5,714 04
Southampton . . . . .	1,790 86
Ware . . . . .	7,140 43
Williamsburg . . . . .	3,971 27

*Middlesex County.*

Acton . . . . .	11,317 03
Arlington . . . . .	280 80
Ashby . . . . .	2,497 95
Ashland . . . . .	1,973 77
Ayer . . . . .	2,040 25
Bedford . . . . .	1,330 20
Billerica . . . . .	4,790 72.
Boxborough . . . . .	1,871 71
Burlington . . . . .	3,026 34
Chelmsford . . . . .	6,292 67
Concord . . . . .	1,863 21
Dracut . . . . .	3,385 76
Framingham . . . . .	2,044 78
Groton . . . . .	1,557 75
Holliston . . . . .	1,922 11
Hudson . . . . .	1,144 79
Lexington . . . . .	2,832 08
Lincoln . . . . .	1,421 30
Littleton . . . . .	143,459 06
Lowell . . . . .	4,797 67
Malden . . . . .	26 65
Marlborough . . . . .	4,450 90
Medford . . . . .	603 26
Melrose . . . . .	443 98
Natick . . . . .	1,556 03
Newton . . . . .	158 35
North Reading . . . . .	2,149 03
Pepperell . . . . .	2,576 99
Reading . . . . .	5,535 64
Shirley . . . . .	1,450 88
Somerville . . . . .	479 95
Stoneham . . . . .	2,627 29
Sudbury . . . . .	1,573 94
Tewksbury . . . . .	1,803 78
Townsend . . . . .	3,645 48
Tyngsborough . . . . .	6,382 70
Waltham . . . . .	23 34
Watertown . . . . .	40,825 21
Wayland . . . . .	1,162 46



Westford . . . . .	\$7,157 72
Weston . . . . .	981 15
Wilmington . . . . .	1,341 25
Winchester . . . . .	45,461 83
Woburn . . . . .	67,929 59

*Nantucket County.*

Nantucket . . . . .	3,326 44
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*Norfolk County.*

Avon . . . . .	1,112 80
Bellingham . . . . .	1,258 51
Braintree . . . . .	4,921 70
Canton . . . . .	3,695 69
Cohasset . . . . .	313 43
Dedham . . . . .	1,845 70
Dover . . . . .	1,469 68
Foxborough . . . . .	795 78
Franklin . . . . .	1,208 89
Holbrook . . . . .	696 62
Milton . . . . .	641 59
Needham . . . . .	970 09
Norfolk . . . . .	1,332 97
Norwood . . . . .	2,330 58
Plainville . . . . .	3,230 25
Quincy . . . . .	1,796 39
Randolph . . . . .	2,718 75
Sharon . . . . .	338 69
Stoughton . . . . .	91,738 62
Walpole . . . . .	4,779 37
Wellesley . . . . .	382 26
Westwood . . . . .	1,529 63
Weymouth . . . . .	8,569 87
Wrentham . . . . .	5,908 73

*Plymouth County.*

Abington . . . . .	4,088 93
Bridgewater . . . . .	5,544 07
Brockton . . . . .	2,225 15
Duxbury . . . . .	4,105 44
East Bridgewater . . . . .	2,476 18
Hanover . . . . .	4,472 32
Hingham . . . . .	2,910 95
Kingston . . . . .	2,575 83

Lakeville . . . . .	\$3,645 08
Marion . . . . .	1,070 79
Marshfield . . . . .	6,616 27
Mattapoisett . . . . .	1,250 14
Middleborough . . . . .	6,629 62
Norwell . . . . .	141 80
Pembroke . . . . .	3,114 07
Plymouth . . . . .	8,647 43
Rochester . . . . .	1,878 33
Rockland . . . . .	4,977 86
Scituate . . . . .	6,487 20
Wareham . . . . .	6,001 97
West Bridgewater . . . . .	1,742 27
Whitman . . . . .	1,912 88

*Suffolk County.*

Boston . . . . .	937 69
Chelsea . . . . .	1,768 47
Revere . . . . .	4,894 95

*Worcester County.*

Ashburnham . . . . .	7,040 22
Athol . . . . .	2,443 20
Auburn . . . . .	4,222 51
Barre . . . . .	4,154 01
Blackstone . . . . .	2,247 56
Brookfield . . . . .	32,980 86
Charlton . . . . .	9,103 53
Douglas . . . . .	1,409 60
Dudley . . . . .	3,290 02
East Brookfield . . . . .	98,383 67
Fitchburg . . . . .	1,595 51
Gardner . . . . .	1,924 83
Grafton . . . . .	6,621 76
Hardwick . . . . .	1,098 64
Harvard . . . . .	1,512 19
Holden . . . . .	3,779 75
Hopedale . . . . .	279 68
Lancaster . . . . .	2,540 48
Leicester . . . . .	95,591 64
Leominster . . . . .	4,076 67
Lunenburg . . . . .	62,420 34
Mendon . . . . .	722 00
Milford . . . . .	3,924 02

Millbury . . . . .	\$3,184 54
Millville . . . . .	2,698 60
New Braintree . . . . .	85 55
North Brookfield . . . . .	2,212 25
Northborough . . . . .	3,115 13
Northbridge . . . . .	1,125 01
Oakham . . . . .	1,146 47
Oxford . . . . .	4,429 79
Paxton . . . . .	3,584 95
Petersham . . . . .	4,860 79
Phillipston . . . . .	1,550 10
Princeton . . . . .	1,439 27
Royalston . . . . .	20 79
Rutland . . . . .	2,164 48
Shrewsbury . . . . .	7,670 32
Southborough . . . . .	1,163 46
Southbridge . . . . .	1,324 68
Spencer . . . . .	34,053 46
Sterling . . . . .	5,584 55
Sturbridge . . . . .	2,261 42
Sutton . . . . .	3,054 96
Templeton . . . . .	4,666 97
Upton . . . . .	2,133 98
Uxbridge . . . . .	4,242 40
Warren . . . . .	4,407 33
Webster . . . . .	1,192 64
West Boylston . . . . .	1,546 64
West Brookfield . . . . .	73,453 94
Westborough . . . . .	1,543 68
Westminster . . . . .	5,807 29
Winchendon . . . . .	8,533 53
Worcester . . . . .	4,702 47
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Total . . . . .	<sup>1</sup> \$2,252,002 87

<sup>1</sup> To this amount should be added items totalling \$13,374.36 for tree planting and traffic census.



MAINTENANCE OF STATE HIGHWAYS (FROM REVENUE APPROPRIATIONS).

(Section 13 of chapter 81 of the General Laws. <sup>1</sup>)

The expenditures during the year in various counties were: —

COUNTY.	Amount.
Barnstable . . . . .	\$17,565 05
Berkshire . . . . .	35,359 20
Bristol . . . . .	30,467 51
Dukes . . . . .	2,679 97
Essex . . . . .	52,438 19
Franklin . . . . .	16,925 33
Hampden . . . . .	24,398 60
Hampshire . . . . .	13,719 39
Middlesex . . . . .	44,349 36
Nantucket . . . . .	1,802 23
Norfolk . . . . .	27,133 02
Plymouth . . . . .	18,176 60
Suffolk . . . . .	5,785 28
Worcester . . . . .	76,897 27

Details of the foregoing expenditures follow: —

*Barnstable County.*

Barnstable . . . . .	\$3,177 51
Bourne . . . . .	1,329 25
Brewster . . . . .	847 25
Chatham . . . . .	564 20
Dennis . . . . .	1,168 39
Eastham . . . . .	24 87
Falmouth . . . . .	1,962 78
Harwich . . . . .	1,664 74
Mashpee . . . . .	787 37
Orleans . . . . .	472 97
Provincetown . . . . .	1,693 23
Sandwich . . . . .	889 88
Truro . . . . .	1,135 93
Wellfleet . . . . .	518 33
Yarmouth, North } . . . . .	1,328 35
Yarmouth, South }	

<sup>1</sup> Printed on page 28.

*Berkshire County.*

Adams . . . . .	\$664 77
Becket . . . . .	2,584 61
Cheshire . . . . .	2,098 54
Clarksburg . . . . .	1,084 00
Dalton . . . . .	1,088 85
Egremont . . . . .	641 37
Florida . . . . .	4,220 20
Great Barrington . . . . .	1,091 22
Hancock . . . . .	148 94
Hinsdale . . . . .	316 55
Lanesborough . . . . .	736 50
Lee . . . . .	3,925 78
Lenox . . . . .	3,593 20
North Adams . . . . .	5,160 43
Pittsfield . . . . .	2,449 07
Richmond . . . . .	593 25
Savoy . . . . .	671 12
Sheffield . . . . .	1,738 35
Stockbridge . . . . .	1,208 58
Washington . . . . .	214 70
Williamstown . . . . .	926 37
Windsor . . . . .	202 80

*Bristol County.*

Acushnet . . . . .	1,074 02
Attleboro . . . . .	860 97
Berkley . . . . .	1,100 13
Dartmouth . . . . .	1,718 02
Dighton . . . . .	1,671 49
Easton . . . . .	166 00
Fairhaven . . . . .	757 46
Fall River . . . . .	23 10
Freetown . . . . .	260 70
Mansfield . . . . .	489 49
North Attleborough . . . . .	1,016 05
Norton . . . . .	2,888 34
Raynham . . . . .	1,016 56
Rehoboth . . . . .	4,067 48
Seekonk . . . . .	2,161 88
Somerset . . . . .	3,679 33
Swansea . . . . .	4,375 24
Taunton . . . . .	2,260 07
Westport . . . . .	881 18

*Dukes County.*

Chilmark . . . . .	\$665 05
Edgartown . . . . .	276 06
Gay Head . . . . .	443 60
Oak Bluffs . . . . .	1,093 91
Tisbury . . . . .	41 10
West Tisbury . . . . .	160 25

*Essex County.*

Amesbury . . . . .	2,015 25
Andover . . . . .	3,512 65
Beverly . . . . .	1,948 84
Danvers . . . . .	49 60
Essex . . . . .	456 90
Gloucester . . . . .	579 97
Groveland . . . . .	1,370 04
Hamilton . . . . .	353 65
Haverhill . . . . .	5,143 69
Ipswich . . . . .	4,679 52
Lawrence . . . . .	542 68
Lynn . . . . .	3,943 16
Merrimac . . . . .	2,196 43
Methuen . . . . .	2,731 15
Middleton . . . . .	46 39
Newbury . . . . .	3,436 01
Newburyport . . . . .	754 90
North Andover . . . . .	7,666 60
Rockport . . . . .	1,004 23
Rowley . . . . .	2,311 06
Salem . . . . .	649 92
Salisbury . . . . .	3,416 89
Saugus . . . . .	1,953 68
Swampscott . . . . .	190 50
Wenham . . . . .	290 03
West Newbury . . . . .	1,194 45

*Franklin County.*

Ashfield . . . . .	197 95
Bernardston . . . . .	832 35
Buckland . . . . .	1,015 60
Charlemont . . . . .	3,973 07
Colrain . . . . .	121 45
Conway . . . . .	594 33
Deerfield . . . . .	1,962 17
Erving . . . . .	1,216 19
Greenfield . . . . .	698 16



Montague . . . . .	\$1,599 36
Northfield . . . . .	792 61
Orange . . . . .	1,558 19
Shelburne . . . . .	1,425 15
Sunderland . . . . .	368 15
Whately . . . . .	570 60

*Hampden County.*

Agawam . . . . .	1,813 97
Blandford . . . . .	1,074 10
Brimfield . . . . .	1,055 95
Chester . . . . .	2,536 83
Chicopee . . . . .	1,639 01
East Longmeadow . . . . .	1,366 76
Holyoke . . . . .	926 85
Monson . . . . .	299 98
Palmer . . . . .	4,421 81
Russell . . . . .	3,232 24
Wales . . . . .	859 44
West Springfield . . . . .	439 60
Westfield . . . . .	3,290 80
Wilbraham . . . . .	1,441 26

*Hampshire County.*

Amherst . . . . .	1,326 69
Belchertown . . . . .	329 17
Cummington . . . . .	407 23
Easthampton . . . . .	187 56
Goshen . . . . .	328 80
Granby . . . . .	1,612 40
Hadley . . . . .	1,276 72
Hatfield . . . . .	255 27
Huntington . . . . .	2,773 99
Northampton . . . . .	743 95
Southampton . . . . .	25 86
South Hadley . . . . .	1,863 07
Ware . . . . .	1,508 36
Williamsburg . . . . .	1,080 32

*Middlesex County.*

Acton . . . . .	1,970 11
Arlington . . . . .	144 71
Ashby . . . . .	1,339 03
Ashland . . . . .	1,347 32
Ayer . . . . .	538 74
Bedford . . . . .	480 01

Billerica . . . . .	\$1,504 15
Boxborough . . . . .	1,092 45
Burlington . . . . .	1,539 48
Chelmsford . . . . .	4,519 73
Concord . . . . .	615 42
Dracut . . . . .	1,244 58
Framingham . . . . .	3,038 56
Groton . . . . .	516 66
Holliston . . . . .	1,464 28
Hudson . . . . .	431 82
Lexington . . . . .	571 84
Lincoln . . . . .	237 38
Littleton . . . . .	2,236 97
Lowell . . . . .	2,407 88
Malden . . . . .	18 50
Marlborough . . . . .	1,982 73
Medford . . . . .	166 83
Melrose . . . . .	103 15
Natick . . . . .	617 06
Newton . . . . .	71 56
North Reading . . . . .	377 31
Pepperell . . . . .	753 72
Reading . . . . .	446 83
Shirley . . . . .	340 13
Somerville . . . . .	312 96
Stoneham . . . . .	483 50
Sudbury . . . . .	242 17
Tewksbury . . . . .	328 36
Townsend . . . . .	982 89
Tyngsborough . . . . .	2,573 46
Watertown . . . . .	303 14
Wayland . . . . .	430 43
Westford . . . . .	2,763 45
Weston . . . . .	495 07
Wilmington . . . . .	709 95
Winchester . . . . .	1,351 48
Woburn . . . . .	1,253 06

*Nantucket County.*

Nantucket . . . . .	1,802 23
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*Norfolk County.*

Avon . . . . .	304 61
Bellingham . . . . .	1,952 04
Braintree . . . . .	1,024 50
Canton . . . . .	1,461 29

Cohasset . . . . .	\$185 42
Dedham . . . . .	233 45
Dover . . . . .	468 95
Foxborough . . . . .	974 23
Franklin . . . . .	3,349 20
Holbrook . . . . .	684 30
Milton . . . . .	369 08

*Norfolk County.*

Needham . . . . .	604 15
Norfolk . . . . .	355 52
Norwood . . . . .	1,604 61
Plainville . . . . .	2,397 10
Quincy . . . . .	1,188 54
Randolph . . . . .	607 14
Sharon . . . . .	222 32
Stoughton . . . . .	977 24
Walpole . . . . .	1,635 37
Wellesley . . . . .	272 15
Westwood . . . . .	1,151 06
Weymouth . . . . .	2,078 38
Wrentham . . . . .	3,032 37

*Plymouth County.*

Abington . . . . .	637 71
Bridgewater . . . . .	1,263 16
Brockton . . . . .	462 91
Duxbury . . . . .	782 60
East Bridgewater . . . . .	574 57
Hanover . . . . .	1,019 52
Hingham . . . . .	339 99
Kingston . . . . .	722 96
Lakeville . . . . .	1,289 00
Marion . . . . .	712 91
Marshfield . . . . .	1,207 24
Mattapoisett . . . . .	419 82
Middleborough . . . . .	1,999 75
Pembroke . . . . .	564 74
Plymouth . . . . .	1,310 77
Rochester . . . . .	855 59
Rockland . . . . .	448 20
Scituate . . . . .	677 88
Wareham . . . . .	2,088 01
West Bridgewater . . . . .	308 52
Whitman . . . . .	490 75



*Suffolk County.*

Boston . . . . .	\$890 92
Chelsea . . . . .	2,117 17
Revere . . . . .	2,777 19

*Worcester County.*

Athol . . . . .	833 00
Auburn . . . . .	4,126 25
Ashburnham . . . . .	3,258 36
Barre . . . . .	1,837 88
Blackstone . . . . .	1,592 70
Brookfield . . . . .	1,446 11
Charlton . . . . .	3,584 57
Douglas . . . . .	520 77
Dudley . . . . .	1,437 61
East Brookfield . . . . .	374 31
Fitchburg . . . . .	605 61
Gardner . . . . .	673 44
Grafton . . . . .	3,916 95
Hardwick . . . . .	1,299 62
Harvard . . . . .	829 80
Holden . . . . .	2,161 69
Hopedale . . . . .	426 83
Lancaster . . . . .	651 42
Leicester . . . . .	3,804 14
Leominster . . . . .	2,120 43
Lunenburg . . . . .	2,433 67
Mendon . . . . .	444 84
Milford . . . . .	1,680 90
Millbury . . . . .	867 64
Millville . . . . .	1,128 11
New Braintree . . . . .	123 40
North Brookfield . . . . .	786 51
Northborough . . . . .	1,047 67
Northbridge . . . . .	240 74
Oakham . . . . .	559 57
Oxford . . . . .	1,440 58
Paxton . . . . .	1,003 50
Petersham . . . . .	1,692 15
Phillipston . . . . .	139 66
Princeton . . . . .	312 83
Rutland . . . . .	899 90
Shrewsbury . . . . .	1,521 03
Southborough . . . . .	384 72
Southbridge . . . . .	174 32
Spencer . . . . .	757 65

Sterling . . . . .	\$3,173 60
Sturbridge . . . . .	339 31
Sutton . . . . .	1,138 97
Templeton . . . . .	2,084 29
Upton . . . . .	2,113 14
Uxbridge . . . . .	2,061 89
Warren . . . . .	832 77
Webster . . . . .	652 44
Westborough . . . . .	544 03
West Boylston . . . . .	788 65
West Brookfield . . . . .	664 35
Westminster . . . . .	3,505 00
Winchendon . . . . .	3,792 84
Worcester . . . . .	2,064 61
<hr/>	
Total . . . . .	\$367,697 00

The amounts expended for maintenance of State highways, the average expenditure per mile in 1921 for maintenance, the average cost per mile per year for each municipality, the number of miles under maintenance, and the amounts to be assessed upon municipalities for maintenance under 1921 expenditures are shown in the following table: —

TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Total to 1921.	During 1921.	Total.	Total to 1921.	During 1921.	Total.
Abington . . . . .	\$9,760 56	\$637 71	\$10,398 27	\$34,444 18	\$4,088 93	\$38,533 11
Acton . . . . .	23,924 31	1,970 11	25,894 42	209,256 41	11,317 03	220,573 44
Acushnet . . . . .	13,671 93	1,074 02	14,745 95	40,652 25	1,342 45	41,994 70
Adams . . . . .	8,591 98	664 77	9,256 75	7,346 11	1,003 33	8,349 44
Agawam . . . . .	19,471 28	1,813 97	20,785 25	19,890 61	2,068 12	21,958 73
Amesbury . . . . .	14,534 81	2,015 25	16,550 06	8,771 68	1,692 10	10,463 78
Amherst . . . . .	7,795 22	1,326 69	9,121 91	12,657 21	4,311 37	16,968 58
Andover . . . . .	28,123 67	3,512 65	31,636 32	91,397 52	19,854 17	111,251 69
Arlington . . . . .	537 92	144 71	682 63	608 75	280 80	889 55
Ashburnham . . . . .	16,628 54	3,258 36	19,886 90	44,540 91	7,040 22	51,581 13
Ashby . . . . .	16,542 37	1,339 03	17,881 40	51,223 36	2,497 95	53,721 31
Ashfield . . . . .	4,895 35	197 95	5,093 30	8,884 58	1,259 77	10,144 35
Ashland . . . . .	7,822 57	1,347 32	9,169 89	6,527 65	1,973 77	8,501 42
Athol . . . . .	17,674 76	833 00	18,507 76	45,250 29	2,443 20	47,693 49
Attleboro . . . . .	15,252 53	860 97	16,113 50	86,616 09	4,111 51	90,727 60
Auburn . . . . .	44,682 82	4,126 25	48,809 07	74,133 78	4,222 51	78,356 29
Avon . . . . .	716 59	304 61	1,021 20	2,330 05	1,112 80	3,442 85
Ayer . . . . .	3,438 68	538 74	3,977 42	4,827 94	2,040 25	6,868 19
Barnstable . . . . .	31,682 22	3,177 51	34,859 73	42,311 83	6,372 14	48,683 97
Barre . . . . .	17,718 51	1,837 88	19,556 39	29,515 57	4,154 01	33,669 58
Becket . . . . .	41,786 78	2,584 61	44,371 39	242,808 81	34,094 98	276,903 79
Bedford . . . . .	6,029 73	480 01	6,509 74	8,018 18	1,330 20	9,348 38
Belchertown . . . . .	5,767 53	329 17	6,096 70	6,795 41	1,976 57	8,771 98
Bellingham . . . . .	6,320 33	1,952 04	8,272 37	8,682 76	1,258 51	9,941 27
Berkley . . . . .	2,771 42	1,100 13	3,271 55	2,603 11	531 32	3,134 43
Bernardston . . . . .	9,881 35	832 35	10,713 70	50,178 42	90,443 07	140,621 49
Beverly . . . . .	59,056 25	1,948 84	61,005 09	161,319 33	8,418 66	169,737 99
Billerica . . . . .	4,998 77	1,504 15	6,502 92	5,760 62	4,790 72	10,551 34
Blackstone . . . . .	14,492 89	1,392 70	16,085 59	13,570 70	2,247 65	15,818 35
Blandford . . . . .	2,079 06	1,074 10	3,153 16	9,863 15	3,707 49	13,570 64
Boston . . . . .	12,901 81	890 92	13,792 73	75,256 15	937 69	76,193 84
Bourne . . . . .	18,930 09	1,329 25	20,259 34	48,798 44	11,507 40	60,305 84
Boxborough . . . . .	9,854 34	1,092 45	10,946 79	12,072 53	1,871 71	13,944 24
Braintree . . . . .	5,071 31	1,024 50	6,095 81	14,226 27	4,921 70	19,147 97
Brewster . . . . .	18,995 72	847 25	19,842 97	44,224 18	3,372 14	47,596 32
Bridgewater . . . . .	9,450 25	1,263 16	10,713 41	31,928 70	5,544 07	37,472 77
Brimfield . . . . .	7,503 72	1,055 95	8,559 67	17,648 96	3,235 04	20,884 00
Brookton . . . . .	16,909 73	462 91	17,372 64	31,381 43	2,225 15	33,606 58
Brookfield . . . . .	21,005 92	1,446 11	22,452 03	45,104 89	32,980 86	78,085 75
Buckland . . . . .	18,866 47	1,015 60	19,882 07	47,242 40	3,224 19	50,466 59
Burlington . . . . .	14,259 99	1,539 48	15,799 47	13,985 38	3,026 34	17,011 72
Canton . . . . .	15,474 85	1,461 29	16,936 14	56,810 69	3,695 69	60,506 38
Charlemont . . . . .	20,704 07	3,973 07	24,677 14	39,094 05	13,999 71	53,093 76
Charlton . . . . .	23,643 80	3,584 57	27,228 37	30,335 11	9,103 53	39,438 64
Chatham . . . . .	15,696 84	564 20	16,261 04	35,471 98	4,243 24	39,715 22
Chelmsford . . . . .	26,634 13	4,519 73	31,153 86	34,103 76	6,292 67	40,396 43
Chelsea . . . . .	9,624 06	2,117 17	11,741 23	20,435 07	1,768 47	22,203 54
Cheshire . . . . .	18,611 24	2,098 54	20,709 78	20,692 64	7,382 37	28,075 01
Chester . . . . .	21,342 56	2,536 83	23,879 39	32,683 50	9,494 89	42,178 39
Chicopee . . . . .	30,353 83	1,639 01	31,992 84	54,149 99	4,581 86	58,731 85
Chilmark . . . . .	10,347 86	665 05	11,012 91	20,399 17	16,414 57	36,814 04
Clarksburg . . . . .	6,878 94	1,084 00	7,962 94	9,629 52	4,435 05	14,064 57
Cohasset . . . . .	8,724 08	185 42	8,909 50	46,526 47	313 43	46,839 90
Colrain . . . . .	5,001 42	121 45	5,122 87	6,510 86	1,389 70	7,900 56
Concord . . . . .	23,152 24	615 42	23,767 66	116,590 83	1,863 21	118,454 04
Conway . . . . .	1,664 18	594 33	2,258 51	4,350 72	4,231 93	8,582 65
Cummington . . . . .	-	407 23	407 23	466 23	1,290 48	1,756 71
Dalton . . . . .	12,726 13	1,088 85	13,814 98	11,942 58	2,920 15	14,862 73
Danvers . . . . .	399 91	49 60	449 51	323 06	284 34	607 40
Dartmouth . . . . .	19,333 29	1,718 02	21,051 31	95,580 09	2,049 50	97,629 59
Dedham . . . . .	3,961 42	233 45	4,194 87	6,992 19	1,845 70	8,837 89
Deerfield . . . . .	34,532 05	1,962 17	36,494 22	74,626 08	6,190 15	80,816 23
Dennis . . . . .	27,626 23	1,168 39	28,794 62	40,441 83	2,340 56	42,782 39
Dighton . . . . .	8,449 39	1,671 49	10,120 88	49,335 17	2,509 25	51,844 42
Douglas . . . . .	6,824 35	520 77	7,345 12	12,847 52	1,409 60	14,257 12
Dover . . . . .	8,470 43	468 95	8,939 38	6,952 87	1,469 68	8,422 55
Dracut . . . . .	7,803 37	1,244 58	9,047 95	10,847 70	3,385 75	14,233 46
Dudley . . . . .	11,865 43	1,437 61	13,303 04	16,962 21	3,290 02	20,252 23
Duxbury . . . . .	13,954 96	782 60	14,737 56	51,862 55	4,105 44	55,967 99
East Bridgewater . . . . .	780 17	574 57	1,354 74	27,274 81	2,476 18	29,750 99
East Brookfield . . . . .	-	374 31	374 31	-	98,383 67	98,383 67



Total expended.	EXPENDED PER MILE IN 1921.			Total Cost per Mile per Year.	Length under Main- tenance (Miles).	Amount to be assessed on Cities and Towns.
	From Revenue Appro- priation.	From Motor Vehicle Fees Fund.	Total.			
\$48,931 38	\$107 36	\$688 37	\$795 73	\$614 75	5.940	\$1,188 00
246,467 86	250 46	1,438 73	1,689 19	1,967 17	7.866	1,573 20
56,740 65	233 33	291 65	524 98	774 31	4.603	460 30
17,606 19	327 80	494 74	822 54	536 26	2.028	834 05
42,743 98	454 29	517 94	972 23	762 78	3.993	798 60
27,013 84	611 61	513 54	1,125 15	483 95	3.295	1,853 68
26,090 49	188 02	611 02	799 04	605 56	7.056	2,819 03
142,888 01	806 95	4,561 03	5,367 98	1,556 61	4.353	5,723 09
1,572 18	111 57	216 50	328 07	606 08	1.297	212 76
71,468 03	530 07	1,145 31	1,675 38	2,322 58	6.147	614 70
71,602 71	163 84	305 63	469 47	672 43	8.173	408 65
15,237 65	123 10	783 44	906 54	409 93	1.608	160 80
17,671 31	421 30	617 19	1,038 49	394 11	3.198	319 80
66,201 25	149 23	437 69	586 92	950 78	5.582	1,638 10
106,841 10	254 05	1,213 19	1,467 24	1,729 66	3.389	2,486 24
127,165 36	778 69	796 85	1,575 54	1,132 93	5.299	1,059 80
4,464 05	186 08	679 78	865 86	504 92	1.637	163 70
10,845 61	154 90	586 62	741 52	558 70	3.478	695 60
83,543 70	160 18	321 22	481 40	415 82	19.837	4,774 83
53,225 97	303 18	685 25	988 43	773 39	6.062	1,212 40
321,275 18	145 87	1,924 31	2,070 18	2,269 75	17.718	885 90
15,858 12	291 27	807 16	1,098 43	505 03	1.648	329 60
14,868 68	101 97	612 32	714 29	315 81	3.228	322 80
18,213 64	613 85	395 76	1,009 61	358 56	3.180	318 00
7,005 98	874 51	422 35	1,296 86	454 31	1.258	62 90
151,335 19	94 83	10,304 55	10,399 38	2,730 10	8.777	438 85
230,743 08	343 05	1,481 90	1,824 95	2,126 80	5.681	3,491 83
17,054 26	363 86	804 89	1,168 75	717 48	5.952	3,147 44
31,903 94	768 68	1,084 77	1,853 45	1,053 10	2.072	414 40
16,723 80	259 88	897 04	1,156 92	1,103 59	4.133	206 65
89,986 57	638 19	671 70	1,309 89	5,181 17	1.396	914 31
80,565 18	103 33	8,945 42	9,048 75	534 35	12.864	4,840 80
24,891 03	329 95	565 30	895 25	414 09	3.311	165 55
25,243 78	171 67	824 68	996 35	714 47	5.968	2,973 10
67,439 29	108 33	431 16	539 49	397 65	7.821	391 05
48,186 18	278 17	1,220 89	1,499 06	802 97	4.541	3,403 62
29,443 67	266 18	815 48	1,081 66	349 24	3.967	198 35
50,979 22	122 14	587 11	709 25	710 31	3.790	1,344 03
100,537 78	814 70	18,580 76	19,395 46	1,342 36	1.775	88 75
70,348 66	235 91	748 94	984 85	752 55	4.305	861 00
32,811 19	405 23	796 61	1,201 84	520 11	3.799	379 90
77,442 52	335 93	849 58	1,185 51	1,647 82	4.350	2,578 49
77,770 90	333 34	1,174 57	1,507 91	1,057 17	11.919	596 10
66,667 01	345 47	877 36	1,222 83	567 82	10.376	1,003 00
55,976 26	78 73	592 14	670 87	486 04	7.166	1,433 20
71,550 29	628 79	875 44	1,504 23	725 30	7.188	5,406 20
33,944 77	2,207 69	1,844 08	4,051 77	1,304 71	.959	1,918 00
48,784 79	314 62	1,106 80	1,421 42	553 26	6.670	333 50
66,057 78	383 44	1,435 14	1,818 58	682 66	6.616	661 60
90,724 69	414 52	1,158 79	1,573 31	1,356 77	3.954	3,110 43
47,526 95	85 38	2,107 44	2,192 82	517 46	7.789	389 45
22,027 51	376 91	1,542 09	1,919 00	982 75	2.876	143 80
55,749 40	81 32	137 47	218 79	1,157 80	2.280	249 42
13,023 43	56 94	651 52	708 46	299 43	2.133	213 30
142,221 70	146 88	444 68	591 56	1,916 71	4.190	1,239 33
10,841 16	193 34	1,376 69	1,570 03	1,113 74	3.074	153 70
2,163 94	66 58	211 00	277 58	1,135 33	6.116	305 80
28,677 71	379 26	1,017 12	1,396 38	502 73	2.871	531 40
1,056 91	16 87	96 71	113 58	205 50	2.940	166 97
118,580 90	370 10	441 51	811 61	1,348 23	4.642	1,883 76
13,032 76	99 17	784 07	883 24	433 61	2.354	1,039 58
117,310 45	161 26	508 78	669 98	818 51	12.168	2,433 60
71,577 01	155 83	312 16	467 99	439 18	7.498	749 80
61,965 30	274 06	411 42	685 48	817 76	6.099	1,219 40
21,602 24	245 07	663 34	908 41	590 01	2.125	425 00
17,361 93	215 01	673 86	888 87	556 49	2.181	436 20
23,281 41	218 23	593 68	811 91	428 27	5.703	1,140 60
33,555 27	316 59	724 51	1,041 10	817 11	4.541	908 20
70,705 55	87 76	460 41	548 17	590 69	8.917	1,783 40
31,105 73	152 57	657 50	810 07	2,880 69	3.766	753 20
98,757 98	104 24	27,397 29	27,501 53	15,606 50	3.591	179 55

## DEPARTMENT OF PUBLIC WORKS.

TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Total to 1921.	During 1921.	Total.	Total to 1921.	During 1921.	Total.
East Longmeadow	\$7,279 70	\$1,366 76	\$8,646 46	\$9,206 38	\$953 40	\$10,159 78
Eastham	11,873 32	24 87	11,898 19	131,154 84	40,349 21	171,504 05
Easthampton	8,476 88	187 56	8,664 44	27,383 32	1,045 37	28,428 69
Easton	5,156 01	166 00	5,322 01	22,332 03	59 16	22,391 19
Edgartown	7,420 86	276 06	7,696 92	3,459 45	345 71	3,805 16
Egremont	2,605 23	641 37	3,246 60	11,228 93	4,103 25	15,332 18
Erving	18,670 68	1,216 19	19,886 87	56,640 70	5,749 56	62,390 26
Essex	6,806 38	456 90	7,263 28	5,847 84	1,985 20	7,833 04
Fairhaven	3,358 05	757 46	4,115 51	22,182 66	1,483 93	23,666 59
Fall River	66 30	23 10	89 40	179 58	44 47	224 05
Falmouth	41,637 69	1,962 78	43,600 47	88,584 02	9,058 90	97,642 92
Fitchburg	16,236 75	605 61	16,892 36	86,503 67	1,595 51	88,099 18
Florida	24,586 10	4,220 20	28,806 30	49,569 29	8,770 78	58,340 07
Foxborough	8,195 04	974 23	9,169 27	26,221 13	795 78	27,016 91
Framingham	16,146 46	3,038 56	19,185 02	13,796 27	2,044 78	15,841 05
Franklin	10,261 35	3,349 20	13,610 55	10,588 14	1,208 89	11,797 03
Freetown	8,499 79	260 70	8,760 49	50,164 83	1,401 44	51,566 27
Gardner	10,858 78	673 44	11,532 22	45,633 68	1,924 83	47,558 51
Gay Head	4,143 79	443 60	4,587 39	6,912 41	1,435 18	8,347 59
Gill	71 50	—	71 50	109 41	10 83	120 24
Glooucester	56,117 04	579 97	56,697 01	43,162 38	3,477 19	46,639 57
Goshen	9,430 61	328 80	9,759 41	19,783 72	1,773 79	21,557 51
Grafton	21,234 16	3,916 95	25,151 11	24,056 36	6,621 76	30,678 12
Granby	15,390 23	1,612 40	17,002 63	15,447 95	4,871 83	20,319 78
Great Barrington	20,990 61	1,091 22	22,081 83	43,074 38	5,090 88	48,165 26
Greenfield	9,184 93	698 16	9,883 09	71,939 69	50,504 25	122,443 94
Groton	3,867 52	516 66	4,384 18	5,784 04	1,557 75	7,341 79
Groveland	8,187 04	1,370 04	9,557 08	9,318 48	297 30	9,615 78
Hadley	21,838 58	1,276 72	23,115 30	50,027 31	2,393 67	52,420 98
Hamilton	14,281 69	353 65	14,635 34	58,162 04	1,062 58	59,224 62
Hancock	49,045 90	148 94	49,194 84	173,324 34	24,158 55	197,482 89
Hanover	4,966 47	1,019 52	5,985 99	14,058 93	4,472 32	18,531 25
Hardwick	3,446 47	1,299 62	4,746 09	3,621 86	1,098 64	4,720 50
Harvard	6,071 85	829 80	6,901 65	8,304 41	1,512 19	9,816 60
Harwich	14,792 34	1,664 74	16,457 08	39,801 64	2,101 27	41,902 91
Hatfield	8,183 86	255 27	8,439 13	70,345 76	1,500 15	71,845 91
Haverhill	33,974 28	5,143 69	39,117 97	22,080 13	3,927 22	26,007 35
Hingham	10,624 87	339 99	10,964 86	50,494 44	2,910 95	53,405 39
Hinsdale	2,724 98	316 55	3,041 53	3,643 69	2,286 59	5,930 28
Holbrook	4,786 48	684 30	5,470 78	7,670 74	696 62	8,367 36
Holden	25,405 63	2,161 69	27,567 32	27,716 90	3,779 75	31,496 65
Holliston	8,485 58	1,464 28	9,949 86	9,876 74	1,922 11	11,798 85
Holyoke	9,700 25	926 85	10,627 10	45,946 42	2,608 99	48,555 41
Hopedale	291 90	426 83	718 73	582 22	279 68	861 90
Hudson	4,103 72	431 82	4,535 54	3,237 61	1,144 79	4,382 40
Huntington	16,983 40	2,773 99	19,757 39	17,306 46	8,280 09	25,586 55
Ipswich	22,331 97	4,679 52	27,011 49	75,951 16	3,701 02	79,652 18
Kingston	2,909 35	722 96	3,632 31	6,269 80	2,575 83	8,845 63
Lakeville	11,407 11	1,289 00	12,696 11	54,002 89	3,645 08	57,647 97
Lancaster	5,851 25	651 42	6,502 67	5,496 11	2,540 48	8,036 59
Lanesborough	5,766 01	736 50	6,502 51	5,958 58	1,210 15	7,168 73
Lawrence	7,075 29	542 68	7,617 97	22,192 95	268 14	22,461 09
Lee	39,228 28	3,925 78	43,154 06	33,126 82	8,565 23	41,692 05
Leicester	48,214 90	3,804 14	52,019 04	107,456 89	95,591 64	203,048 53
Lenox	57,105 66	3,593 20	60,698 86	57,534 44	9,956 43	67,490 87
Leominster	10,270 01	2,120 43	12,390 44	8,790 98	4,076 67	12,867 65
Lexington	25,933 15	571 84	26,504 99	114,402 07	2,832 08	117,234 15
Lincoln	11,988 41	237 38	12,225 79	69,183 18	1,421 30	70,604 48
Littleton	16,641 88	2,236 97	18,878 85	84,204 65	143,459 06	227,663 71
Lowell	28,895 39	2,407 88	31,303 27	25,163 71	4,797 67	29,961 38
Lunenburg	22,691 88	2,433 67	25,125 55	140,744 66	62,420 34	203,165 00
Lynn	15,716 71	3,943 16	19,659 87	15,064 53	3,418 62	18,483 15
Lynnfield	—	—	—	—	98 51	98 51
Malden	239 12	18 50	257 62	487 66	26 65	514 31
Mansfield	2,763 78	489 49	3,253 27	11,567 69	188 58	11,756 27
Marion	19,112 25	712 91	19,825 16	64,339 69	1,070 79	65,410 48
Marlborough	42,306 59	1,982 73	44,289 32	168,512 34	4,450 90	172,963 24
Marshfield	16,838 73	1,207 24	18,045 97	96,276 32	6,616 27	102,892 59
Mashpee	3,008 52	787 37	3,795 89	4,926 35	2,378 85	7,305 20
Mattapoisett	10,146 70	419 82	10,566 52	68,911 69	1,250 14	70,161 83
Medford	3,429 52	166 83	3,596 35	20,053 24	603 26	20,656 50



Total expended.	EXPENDED PER MILE IN 1921.			Total Cost per Mile per Year.	Length under Mainte- nance (Miles).	Amount to be assessed on Cities and Towns.
	From Revenue Appro- priation.	From Motor Vehicle Fees Fund.	Total.			
\$18,806 24	\$759 73	\$529 96	\$1,289 69	\$729 23	1.799	\$179 90
183,402 24	3 85	6,246 00	6,249 85	2,172 06	6.460	323 00
37,093 13	68 50	381 80	450 30	630 59	2.738	616 47
27,713 20	207 24	73 85	281 09	1,652 54	.801	112 58
11,502 08	113 75	142 44	256 19	197 52	2.427	242 70
18,578 78	117 42	751 24	868 66	588 44	5.462	273 10
82,277 13	149 72	707 81	857 53	797 38	8.123	812 30
15,096 32	313 59	1,362 52	1,676 11	974 96	1.457	145 70
27,782 10	203 24	398 16	601 40	589 21	3.727	1,120 69
313 45	721 87	1,389 68	2,111 55	1,411 93	.032	33 79
141,243 39	126 41	583 43	709 84	573 61	15.527	5,510 84
104,991 54	147 06	387 44	534 50	1,208 64	4.118	1,100 56
87,146 37	586 79	1,219 52	1,806 31	1,704 57	7.192	719 20
36,186 18	277 24	226 46	503 70	608 86	3.514	702 80
35,026 07	948 07	638 00	1,586 07	744 09	3.205	2,541 67
25,407 58	890 03	321 26	1,211 29	580 48	3.763	2,279 05
60,326 76	67 38	362 22	429 60	898 43	3.869	386 90
59,090 73	200 67	573 55	774 22	784 55	3.356	1,299 13
12,934 98	141 54	457 95	599 49	600 68	3.134	156 70
191 74	-	38 13	38 13	80 80	.284	5 42
103,336 58	85 92	515 14	601 06	1,069 39	6.750	2,028 58
31,316 92	133 66	721 05	854 71	554 24	2.460	123 00
55,829 23	408 95	691 35	1,100 30	643 06	9.578	1,915 60
37,322 41	209 78	633 86	843 64	426 92	7.686	384 30
70,247 09	125 38	584 96	710 34	744 35	8.703	3,091 05
132,327 03	89 65	6,484 88	6,574 53	1,583 81	7.788	11,402 00
11,725 97	96 55	291 11	387 66	377 49	5.351	1,037 20
19,172 86	795 14	172 55	967 69	599 45	1.723	172 30
75,536 28	272 22	510 38	782 60	783 22	4.690	938 00
73,859 96	114 04	342 66	456 70	1,561 29	3.101	620 40
246,677 73	46 08	7,474 80	7,520 88	3,257 33	3.232	161 60
24,517 24	178 96	785 03	963 99	636 20	5.697	1,139 20
9,466 59	1,586 84	1,341 44	2,928 28	529 45	.819	163 80
16,718 25	358 29	652 93	1,011 22	461 25	2.316	463 20
58,359 99	257 02	324 42	581 44	485 61	6.477	647 70
80,285 04	72 11	423 77	495 88	1,865 48	3.540	708 00
65,125 32	899 88	687 06	1,586 94	687 55	5.716	4,535 46
64,370 25	55 22	472 79	528 01	906 32	6.157	1,625 47
8,971 81	89 80	648 68	738 48	375 31	3.525	176 25
13,838 14	174 79	177 94	352 73	317 91	3.915	690 46
59,063 97	311 08	543 93	855 01	492 13	6.949	1,389 80
21,748 71	297 38	390 36	687 74	219 20	4.924	984 80
59,182 51	222 43	626 11	848 54	1,247 78	4.167	1,767 92
1,580 63	1,350 73	88 50	1,439 23	1,429 15	.316	353 26
8,917 94	378 12	1,002 44	1,380 56	530 90	1.142	788 30
45,343 94	346 10	1,033 07	1,379 17	712 80	8.015	400 75
106,663 67	1,058 47	837 15	1,895 62	1,989 51	4.421	4,190 27
12,477 94	284 74	1,014 51	1,299 25	437 50	2.539	253 90
70,344 08	154 19	436 01	590 20	611 71	8.360	836 00
14,539 26	521 55	2,034 01	2,555 56	606 96	1.249	249 80
13,671 24	212 98	349 96	562 94	563 43	3.458	117 00
30,079 06	669 98	331 04	1,001 02	3,038 59	.810	405 41
84,846 11	366 69	800 04	1,166 73	602 00	10.706	2,141 20
255,067 57	789 40	17,581 69	18,371 09	2,204 41	5.437	1,087 40
128,189 73	468 90	1,299 29	1,768 19	1,002 91	7.663	6,774 81
25,258 09	831 86	1,599 32	2,431 18	571 28	2.549	3,098 55
143,739 14	114 21	565 62	679 83	1,401 09	5.007	1,701 96
82,830 27	115 23	689 95	805 18	1,615 82	2.060	206 00
246,542 56	253 39	16,250 46	16,503 85	3,435 17	8.828	882 80
61,264 65	907 26	1,807 71	2,714 97	1,052 55	2.654	3,602 77
228,290 55	413 47	10,604 88	11,018 35	2,706 59	5.886	588 60
38,143 02	1,076 78	933 54	2,010 32	1,192 90	3.662	3,680 89
98 51	-	64 72	64 72	648 09	1.522	49 25
771 93	122 52	176 49	299 01	1,495 99	.151	22 58
15,009 54	403 54	155 47	559 01	710 21	1.213	339 03
85,235 64	107 85	162 00	269 85	671 27	6.610	891 85
217,252 56	283 98	637 48	921 46	1,772 68	6.982	3,216 83
120,938 56	145 85	799 36	945 21	869 94	8.277	1,655 40
11,101 09	100 79	304 51	405 30	199 92	7.812	390 60
80,728 35	130 95	389 94	520 89	1,139 55	3.206	320 60
24,252 85	193 54	699 83	893 37	2,100 54	.862	385 05



TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Total to 1921.	During 1921.	Total.	Total to 1921.	During 1921.	Total.
Melrose . . . .	\$3,013 00	\$103 15	\$3,116 15	\$2,419 59	\$443 98	\$2,863 57
Mendon . . . .	519 01	444 84	963 85	3,078 86	722 00	3,800 86
Merrimac . . . .	10,198 73	2,196 43	12,395 16	8,413 38	2,449 32	10,862 70
Methuen . . . .	15,168 04	2,731 15	17,899 19	83,646 68	2,277 54	85,924 22
Middleborough . .	28,645 28	1,999 75	30,645 03	119,726 80	6,629 62	126,356 42
Middleton . . . .	15,946 17	46 39	15,992 56	3,299 70	1,437 78	4,737 48
Milford . . . . .	7,246 92	1,680 90	8,927 82	11,375 75	3,924 02	15,299 77
Millbury . . . . .	20,382 30	867 64	21,249 94	54,457 45	3,184 54	57,641 99
Millville . . . . .	3,981 90	1,128 11	5,110 01	4,949 34	2,698 60	7,647 94
Milton . . . . .	8,317 25	369 08	3,686 33	14,847 51	641 59	15,489 10
Monson . . . . .	5,177 77	299 98	5,477 75	2,576 30	961 54	3,537 84
Montague . . . . .	13,756 04	1,599 36	15,355 40	47,364 32	12,136 35	59,500 67
Nantucket . . . . .	24,886 21	1,802 23	26,688 44	14,030 11	3,326 44	17,356 55
Natick . . . . .	15,989 49	617 06	16,606 55	81,743 46	1,556 03	83,299 49
Needham . . . . .	7,092 42	604 15	7,696 57	6,792 73	970 09	7,762 82
New Ashford . . . .	-	-	-	-	66 27	66 27
New Braintree . . .	546 86	123 40	670 26	445 42	85 55	530 97
Newbury . . . . .	22,251 28	3,436 01	25,687 29	18,976 37	4,539 30	23,515 67
Newburyport . . . .	14,257 10	754 90	15,012 00	10,219 37	1,170 05	11,389 42
New Marlborough . .	269 06	-	269 06	192 06	100 66	292 72
Newton . . . . .	4,274 57	71 56	4,346 13	18,432 07	158 35	18,590 42
Norfolk . . . . .	6,649 64	355 52	7,005 16	16,084 60	1,332 97	17,417 57
North Adams . . . .	64,529 75	5,160 43	69,690 18	116,591 81	85,197 75	201,789 56
Northampton . . . .	12,288 24	743 95	13,032 19	47,212 43	1,945 92	49,158 35
North Andover . . . .	22,764 29	7,666 60	30,430 89	19,097 21	4,378 22	23,475 43
North Attleborough .	14,162 74	1,016 05	15,178 79	55,599 94	1,766 36	57,366 30
Northborough . . . .	20,383 95	1,047 67	21,431 62	76,761 30	3,115 13	79,876 43
Northbridge . . . . .	1,242 09	240 74	1,482 83	3,006 95	1,125 01	4,131 96
North Brookfield . .	4,332 42	786 51	5,118 93	5,101 14	2,212 25	7,313 39
Northfield . . . . .	8,390 46	792 61	9,183 07	25,858 45	3,472 09	29,330 54
North Reading . . . .	21,742 95	377 31	22,120 26	67,768 29	2,149 03	69,917 32
Norton . . . . .	12,994 13	2,888 34	15,882 47	17,589 49	1,258 51	18,848 00
Norwell . . . . .	-	-	-	-	141 80	141 80
Norwood . . . . .	14,659 31	1,604 61	16,263 92	28,840 91	2,330 58	31,171 49
Oak Bluffs . . . . .	11,361 56	1,093 91	12,455 47	7,105 67	279 88	7,385 55
Oakham . . . . .	1,463 47	559 57	2,023 04	6,168 94	1,146 47	7,315 41
Orange . . . . .	21,538 55	1,558 19	23,096 74	64,479 27	7,070 36	71,549 63
Orleans . . . . .	10,745 79	472 97	11,218 76	17,966 36	1,638 90	19,605 26
Oxford . . . . .	8,700 34	1,440 58	10,140 92	10,238 34	4,429 79	14,668 13
Palmer . . . . .	49,397 91	4,421 81	53,819 72	146,656 01	118,735 47	265,391 48
Paxton . . . . .	26,846 75	1,003 50	27,850 25	25,960 59	3,584 95	29,545 54
Peabody . . . . .	-	-	-	-	-	-
Pembroke . . . . .	4,255 85	564 74	4,820 59	5,388 38	3,114 07	8,502 45
Pepperell . . . . .	4,643 86	753 72	5,397 58	10,049 12	2,576 99	12,626 11
Petersham . . . . .	1,651 04	1,692 15	3,343 19	6,749 46	4,860 79	11,610 25
Phillipston . . . . .	25,552 50	139 66	25,692 16	30,240 81	1,550 10	31,790 91
Pittsfield . . . . .	61,981 66	2,449 07	64,430 73	150,293 41	35,059 62	185,353 03
Plainville . . . . .	7,054 41	2,397 10	9,451 51	28,644 76	3,230 25	31,875 01
Plymouth . . . . .	20,900 30	1,310 77	22,211 07	80,874 19	8,647 43	89,521 62
Princeton . . . . .	4,602 30	312 83	4,915 13	7,864 18	1,439 27	9,303 45
Provincetown . . . .	5,734 39	1,693 23	7,427 62	16,051 97	5,490 37	21,542 34
Quincy . . . . .	10,637 55	1,188 54	11,826 09	62,475 55	1,796 39	64,271 94
Randolph . . . . .	4,270 57	607 14	4,877 71	52,211 22	2,718 75	54,929 97
Raynham . . . . .	6,189 58	1,016 56	7,206 14	15,135 51	2,495 20	17,630 71
Reading . . . . .	41,354 87	446 83	41,801 70	56,731 78	5,535 64	62,267 42
Rehoboth . . . . .	17,223 84	4,067 48	21,291 32	63,467 62	5,000 84	68,468 46
Revere . . . . .	19,186 76	2,777 19	21,963 95	42,960 61	4,894 95	47,855 56
Richmond . . . . .	9,573 87	593 25	10,167 12	31,914 45	4,905 06	36,819 51
Rochester . . . . .	11,694 81	855 59	12,550 40	32,485 79	1,878 33	34,364 12
Rockland . . . . .	8,461 90	448 20	8,910 10	14,879 56	4,977 86	19,857 42
Rockport . . . . .	10,736 31	1,004 23	11,740 54	4,659 98	1,147 68	5,807 66
Rowley . . . . .	14,204 77	2,311 06	16,515 83	100,421 24	2,512 79	102,934 03
Royalston . . . . .	-	-	-	-	20 79	20 79
Russell . . . . .	41,218 01	3,232 24	44,450 25	52,647 65	8,873 36	61,521 01
Rutland . . . . .	5,973 42	899 90	6,873 32	13,077 23	2,164 48	15,241 71
Salem . . . . .	20,515 15	649 92	21,165 07	12,999 84	2,702 63	15,702 47
Salisbury . . . . .	12,895 01	3,416 89	16,311 90	57,164 47	4,294 16	61,458 63
Sandwich . . . . .	14,288 87	889 88	15,178 75	31,937 28	3,217 85	35,155 13
Saugus . . . . .	19,457 27	1,953 68	21,410 95	71,264 00	3,034 05	74,298 05
Savoy . . . . .	4,635 26	671 12	5,306 38	9,847 28	3,755 10	13,602 38
Scituate . . . . .	14,229 36	677 88	14,907 24	48,945 32	6,487 20	55,432 52
Seekonk . . . . .	13,503 05	2,161 88	15,664 93	90,877 17	3,755 51	94,632 68
Sharon . . . . .	1,051 56	222 32	1,273 88	1,750 49	338 69	2,089 18

Total expended.	EXPENDED PER MILE IN 1921.			Total Cost per Mile per Year.	Length under Mainte- nance (Miles).	Amount to be assessed on Cities and Towns.
	From Revenue Appro- priation.	From Motor Vehicle Fees Fund.	Total.			
\$5,979 72	\$181 60	\$781 65	\$963 25	\$905 60	.568	\$273 56
4,764 71	240 97	391 12	632 09	640 16	1.846	92 30
23,257 86	984 50	1,097 86	2,082 36	502 99	2.231	223 10
103,823 41	350 28	292 10	642 38	1,079 85	7.797	2,504 35
157,001 45	160 71	532 80	693 51	683 09	12.443	3,504 58
30,730 04	17 47	541 54	559 01	1,078 28	2.655	265 50
24,227 59	474 02	1,106 60	1,580 62	505 28	3.546	2,802 46
78,891 93	291 05	1,068 28	1,359 33	1,489 06	2.981	596 20
12,757 95	680 81	1,628 61	2,309 42	541 19	1.657	165 70
24,175 43	349 17	606 99	956 16	1,284 22	1.057	505 34
9,015 59	185 75	595 38	781 13	260 27	1.615	323 00
74,856 07	279 12	2,118 04	2,397 16	811 44	5.730	6,867 85
44,044 99	278 16	513 42	791 58	291 91	6.479	2,564 34
99,906 04	192 59	485 65	678 24	1,711 57	3.204	1,086 54
15,459 39	296 88	476 70	773 58	442 52	2.035	787 12
66 27	-	66 27	66 27	-	1.000	33 13
1,201 23	310 83	215 49	526 32	150 68	.397	19 85
49,202 96	812 10	1,072 87	1,884 97	622 19	4.231	846 20
26,401 42	340 04	527 05	867 09	623 24	2.220	962 46
561 78	-	437 65	437 65	814 18	.230	23 00
22,936 55	69 34	153 44	222 78	1,067 11	1.032	114 96
24,422 73	245 86	921 83	1,167 69	548 01	1.446	144 60
271,479 74	634 27	10,471 70	11,105 97	2,305 54	8.136	7,254 67
62,190 54	106 23	277 87	384 10	843 01	7.003	1,344 94
53,906 32	722 99	412 88	1,135 87	492 76	10.604	6,022 41
72,545 09	282 39	490 93	773 32	812 90	3.598	1,391 20
101,308 05	195 46	581 18	776 64	1,138 83	5.360	1,072 00
5,614 79	53 51	250 06	303 57	285 23	4.499	682 87
12,432 32	349 25	982 35	1,331 60	385 52	2.252	450 40
38,513 61	164 17	719 16	883 33	956 31	4.828	427 80
92,037 58	148 66	846 74	995 40	1,825 45	2.538	253 80
34,730 47	379 00	165 14	544 14	569 85	7.621	762 10
141 80	-	66 32	66 32	33 16	2.138	70 90
47,435 41	755 82	1,097 78	1,853 60	953 36	2.123	1,967 59
19,841 02	458 28	117 25	575 53	326 52	2.387	477 40
9,338 45	200 42	410 63	611 05	645 90	2.792	139 60
94,646 37	324 96	1,474 53	1,799 49	925 68	4.795	959 00
30,824 02	100 67	348 85	449 52	376 50	4.698	939 60
24,809 05	167 82	516 05	683 87	550 37	8.584	1,716 80
319,211 20	307 82	8,265 61	8,573 43	1,870 81	14.365	12,332 14
57,395 79	278 98	996 65	1,275 63	647 44	3.597	179 85
-	-	-	-	-	3.238	-
13,323 04	129 97	716 70	846 67	452 07	4.345	434 00
18,023 69	210 71	720 43	931 14	582 61	3.577	715 60
14,953 44	206 77	593 79	800 50	738 40	8.186	766 40
57,483 07	50 15	556 59	606 74	1,191 31	2.785	139 25
249,783 76	270 53	3,872 71	4,143 24	1,839 94	9.053	6,348 70
41,326 52	1,045 40	1,408 74	2,454 14	1,158 19	2.293	229 30
111,732 69	91 03	604 72	695 75	555 18	14.300	5,089 87
14,218 58	140 28	645 41	785 69	322 79	2.230	223 00
28,969 96	437 75	1,419 43	1,857 18	940 46	3.868	773 60
76,098 03	368 31	556 67	924 98	1,656 32	3.227	1,492 47
59,807 68	163 65	732 82	896 47	1,417 51	3.710	742 00
24,836 85	179 83	441 39	621 22	441 85	5.653	565 30
104,069 12	113 90	1,411 07	1,524 97	1,461 50	3.923	2,991 24
89,759 78	621 37	763 95	1,385 32	800 41	6.546	654 60
69,819 51	553 12	974 90	1,528 02	2,307 47	5.021	3,836 07
46,986 63	147 68	1,221 08	1,368 78	623 18	4.017	200 85
46,914 52	138 67	304 43	443 10	448 42	6.170	617 00
28,767 52	190 40	2,114 63	2,305 03	730 38	2.354	2,713 03
17,548 20	627 64	717 28	1,344 92	790 47	1.600	320 00
119,449 86	636 13	691 66	1,327 79	2,632 79	3.633	363 30
20 79	-	-	-	-	-	-
105,971 26	332 53	912 90	1,245 43	611 50	9.720	1,944 00
22,115 03	162 17	390 07	552 24	657 48	5.549	554 90
36,867 54	196 35	816 50	1,012 85	1,222 68	3.310	1,120 96
77,770 53	345 04	433 62	778 66	838 33	9.903	990 30
50,333 88	93 46	337 97	431 42	464 05	9.521	952 10
95,709 00	301 65	468 43	770 08	1,992 61	6.477	2,493 86
18,908 76	372 22	2,082 70	2,454 92	1,480 02	1.803	90 20
70,339 76	126 14	1,207 15	1,333 29	766 70	5.374	3,582 54
110,297 61	358 58	622 91	981 49	1,344 58	6.029	1,205 80
3,363 06	348 46	530 86	879 32	402 04	.638	127 60



## DEPARTMENT OF PUBLIC WORKS.

TOWN OR CITY.	AMOUNTS EXPENDED.					
	REVENUE APPROPRIATIONS.			MOTOR VEHICLE FEES FUND.		
	Total to 1921.	During 1921.	Total.	Total to 1921.	During 1921.	Total.
Sheffield . . . . .	\$8,962 98	\$1,738 35	\$10,701 33	\$15,442 05	\$5,943 85	\$21,385 90
Shelburne . . . . .	15,080 65	1,425 15	16,505 80	30,270 76	5,720 06	35,990 82
Shirley . . . . .	2,503 44	340 13	2,843 57	2,940 95	1,450 88	4,391 83
Shrewsbury . . . . .	51,575 25	1,521 03	53,096 28	106,931 76	7,670 32	114,602 08
Somerset . . . . .	26,047 64	3,679 33	29,726 97	124,744 83	3,427 47	128,172 30
Somerville . . . . .	7,691 74	312 96	8,004 70	44,060 12	479 95	44,540 07
Southampton . . . . .	1,516 70	25 86	1,542 56	1,683 07	1,790 86	3,473 93
Southborough . . . . .	10,055 72	384 72	10,440 44	10,625 77	1,163 46	11,789 23
Southbridge . . . . .	4,390 53	174 32	4,564 85	8,069 03	1,324 68	9,393 71
South Hadley . . . . .	55,338 68	1,863 07	57,201 75	55,018 18	5,714 04	60,732 22
Spencer . . . . .	24,067 53	757 65	24,825 18	22,670 10	34,053 46	56,723 56
Sterling . . . . .	17,711 25	3,173 60	20,884 85	14,809 72	5,584 55	20,394 27
Stockbridge . . . . .	14,447 70	1,208 58	15,656 28	28,196 58	2,987 69	31,184 27
Stoneham . . . . .	13,475 69	483 50	13,959 19	60,969 61	2,627 29	63,596 90
Stoughton . . . . .	10,831 95	977 24	11,809 19	48,140 56	91,738 62	139,879 18
Sturbridge . . . . .	7,155 98	339 81	7,495 79	11,544 90	2,261 42	13,806 32
Sudbury . . . . .	35,914 28	242 17	36,156 45	157,974 73	1,573 94	159,548 67
Sunderland . . . . .	5,631 30	368 15	5,999 45	25,692 89	2,117 60	27,810 49
Sutton . . . . .	9,992 03	1,138 97	11,131 00	17,043 02	3,054 96	20,097 98
Swampscott . . . . .	23,265 54	190 50	23,456 04	21,715 64	891 78	22,607 42
Swansea . . . . .	23,397 78	4,375 24	27,773 02	76,392 64	3,845 82	80,238 46
Taunton . . . . .	21,052 69	2,260 07	23,312 76	70,633 76	5,445 46	76,079 22
Templeton . . . . .	16,125 65	2,084 29	18,209 94	48,430 29	4,666 97	53,097 26
Tewksbury . . . . .	18,490 34	328 86	18,819 20	159,407 44	1,803 78	161,211 22
Tisbury . . . . .	5,989 28	41 10	6,030 38	23,948 92	874 30	24,823 22
Topsfield . . . . .	-	-	-	-	9 75	9 75
Townsend . . . . .	13,950 24	982 89	14,933 13	32,264 37	3,645 48	35,909 85
Truro . . . . .	13,592 58	1,135 93	14,728 51	49,048 51	74,522 49	123,571 00
Tyngsborough . . . . .	25,117 91	2,573 46	27,691 37	29,600 24	6,382 70	35,982 94
Upton . . . . .	1,970 76	2,113 14	4,083 90	2,047 02	2,133 98	4,181 00
Uxbridge . . . . .	11,773 96	2,061 89	13,835 85	16,073 69	4,242 40	20,316 09
Wales . . . . .	2,309 64	859 44	3,169 08	2,315 30	850 18	3,165 48
Walpole . . . . .	22,132 58	1,635 37	23,767 95	62,069 52	4,779 37	66,848 89
Waltham . . . . .	-	-	-	-	23 34	23 34
Ware . . . . .	13,285 36	1,508 36	14,793 72	12,707 43	7,140 43	19,847 86
Wareham . . . . .	26,497 10	2,088 01	28,585 11	94,468 83	6,001 97	100,470 80
Warren . . . . .	22,521 09	832 77	23,353 86	119,768 72	4,407 33	124,176 05
Washington . . . . .	-	214 70	214 70	159 25	842 40	1,001 65
Watertown . . . . .	9,047 37	303 14	9,350 51	12,185 71	40,825 21	53,010 92
Wayland . . . . .	42,941 85	430 43	43,372 28	40,951 50	1,162 46	42,113 96
Webster . . . . .	5,225 69	652 44	5,878 13	13,428 85	1,192 84	14,621 69
Wellesley . . . . .	6,210 65	272 15	6,482 80	18,455 95	382 26	18,838 21
Wellfleet . . . . .	13,526 80	518 33	14,045 13	69,574 93	39,002 23	108,577 16
Wenham . . . . .	14,045 00	290 03	14,335 03	54,669 75	1,054 77	55,724 52
Westborough . . . . .	7,536 70	544 03	8,080 73	9,241 99	1,543 68	10,785 58
West Boylston . . . . .	11,224 38	788 65	12,013 03	43,995 20	1,546 64	45,541 84
West Bridgewater . . . . .	22,738 35	308 52	23,046 87	10,860 09	1,742 27	12,602 36
West Brookfield . . . . .	18,785 60	664 35	19,449 95	46,522 14	73,453 94	119,976 08
Westfield . . . . .	38,283 74	3,290 80	41,574 54	49,075 56	16,846 29	65,921 85
Westford . . . . .	15,863 38	2,763 45	18,626 83	19,370 62	7,157 72	26,528 34
Westminster . . . . .	32,290 50	3,505 00	35,795 50	81,862 30	5,807 29	87,669 59
West Newbury . . . . .	24,983 03	1,194 45	26,177 48	21,354 96	2,606 95	23,961 91
Weston . . . . .	25,613 02	495 07	26,108 09	43,289 68	981 15	44,270 83
Westport . . . . .	39,693 10	881 18	40,574 28	61,170 43	2,893 71	64,064 14
West Springfield . . . . .	11,585 18	439 60	12,024 78	51,048 59	3,025 41	54,074 00
West Tisbury . . . . .	6,389 25	160 25	6,549 50	20,253 96	9,007 63	29,261 59
Westwood . . . . .	12,980 59	1,151 06	14,131 65	14,844 98	1,529 63	16,374 61
Weymouth . . . . .	34,868 86	2,078 38	36,947 24	101,012 37	8,569 87	109,582 24
Whately . . . . .	16,287 88	570 60	16,858 48	48,523 52	1,863 15	50,386 67
Whitman . . . . .	7,048 49	490 75	7,539 24	19,742 50	1,912 88	21,655 38
Wilbraham . . . . .	27,499 15	1,441 26	28,940 41	100,909 66	5,817 68	106,727 34
Williamsburg . . . . .	9,467 14	1,080 32	10,547 46	35,206 40	3,971 27	39,177 67
Williamstown . . . . .	14,999 70	926 37	15,926 07	44,376 98	8,055 10	52,432 08
Wilmington . . . . .	6,141 10	709 95	6,851 05	75,529 10	1,341 25	76,870 35
Winchendon . . . . .	16,049 59	3,792 84	19,842 43	40,843 10	8,533 53	49,376 63
Winchester . . . . .	12,896 62	1,351 48	14,248 10	16,868 58	45,461 83	62,330 41
Windsor . . . . .	2,710 73	202 80	2,913 53	6,008 46	990 26	6,998 72
Woburn . . . . .	14,854 95	1,253 06	16,108 01	13,412 22	67,929 59	81,341 81
Worcester . . . . .	34,168 72	2,064 61	36,233 33	75,827 67	4,702 47	80,530 14
Wrentham . . . . .	19,844 82	3,032 37	22,877 19	69,321 32	5,908 73	75,230 05
Yarmouth, North } . . . . .	24,269 05	1,328 35	25,597 40	56,801 70	2,867 12	59,668 82
Yarmouth, South }						
Total . . . . .	\$4,209,091 18	\$367,697 00	\$4,576,788 18	\$10,877,487 63	\$2,252,002 87	\$13,129,490 50



Total expended.	EXPENDED PER MILE IN 1921.			Total Cost per Mile per Year.	Length under Main- tenance (Miles).	Amount to be assessed on Cities and Towns.
	From Revenue Appro- priation.	From Motor Vehicle Fees Fund.	Total.			
\$32,087 23	\$151 11	\$516 67	\$667 78	\$537 03	11.504	\$1,150 40
52,496 62	151 95	609 88	761 83	824 61	9.379	1,366 60
7,235 40	94 01	401 02	495 03	309 34	3.618	361 80
167,698 36	313 36	1,580 21	1,893 57	1,554 89	4.854	970 80
157,899 27	370 94	345 55	716 49	946 49	9.919	1,983 80
52,544 77	197 70	303 19	500 89	2,965 11	1.583	396 46
5,016 49	36 53	2,529 47	2,566 00	448 46	.708	35 40
22,229 67	104 23	315 22	419 45	428 01	3.691	738 20
13,958 56	128 46	976 18	1,104 64	580 83	1.357	749 50
117,933 97	252 99	775 94	1,028 93	924 48	7.364	3,788 55
81,548 74	247 68	11,132 22	11,379 90	1,556 00	3.059	611 80
41,279 12	389 02	684 55	1,073 57	428 74	8.158	815 80
46,840 55	284 17	702 49	986 66	973 65	4.253	850 60
77,556 09	305 63	1,660 74	1,966 37	2,268 38	1.582	1,555 39
151,688 37	175 73	16,496 78	16,672 51	2,141 52	5.561	4,378 00
21,302 11	144 42	961 08	1,105 50	552 32	2.353	235 30
195,705 12	47 35	307 77	355 12	1,887 72	5.114	511 40
33,809 94	92 71	533 27	625 98	753 69	3.971	198 55
31,228 98	165 14	442 94	608 08	595 78	6.897	689 70
46,063 46	127 77	598 10	725 87	1,388 29	1.491	541 14
108,011 48	462 50	406 53	869 03	1,062 02	9.460	1,892 00
99,391 98	212 57	512 18	724 75	792 43	10.632	3,852 77
71,307 20	366 44	820 49	1,186 93	806 18	5.688	1,137 60
180,030 42	53 16	291 59	344 75	1,619 92	6.186	1,237 20
30,853 60	21 34	453 94	475 28	607 27	1.926	385 20
9 75	-	-	-	-	-	-
50,842 98	150 87	559 55	710 42	442 06	6.515	651 50
138,299 51	112 55	7,383 58	7,496 13	1,564 65	10.093	504 65
63,674 31	370 82	919 70	1,290 52	550 50	6.940	347 00
8,264 90	407 39	411 41	818 80	922 42	5.187	518 70
34,151 94	352 10	724 45	1,076 55	506 45	5.856	3,152 14
6,334 56	168 52	166 70	335 22	248 55	5.100	255 00
90,616 84	309 91	905 70	1,215 61	799 09	5.277	3,207 37
23 34	-	24 51	24 51	-	.952	11 67
34,641 58	221 75	1,049 75	1,271 50	487 37	6.802	4,324 40
129,055 91	157 75	453 46	611 21	888 12	13.236	4,044 99
147,529 91	168 58	892 17	1,060 75	1,702 75	4.940	988 00
1,216 35	96 32	377 93	474 25	455 05	2.229	111 45
62,361 43	356 64	48,029 66	48,386 30	2,914 35	.850	1,700 00
85,486 24	150 50	406 45	556 95	1,543 71	2.860	572 00
20,499 82	250 65	458 26	708 91	779 75	2.603	922 64
25,321 01	231 42	325 05	556 47	1,061 05	1.176	327 21
122,622 29	70 37	5,294 90	5,365 27	1,360 82	7.366	368 30
70,059 55	164 60	598 63	763 23	1,922 44	1.762	352 40
18,866 31	181 89	516 11	698 00	353 13	2.991	598 20
57,554 87	183 27	359 43	542 70	1,059 72	4.303	430 30
35,649 23	97 60	551 18	648 78	583 01	3.161	316 10
139,426 03	236 09	26,103 03	26,339 12	2,672 84	2.814	281 40
107,496 39	566 99	2,902 53	3,469 52	814 36	5.804	5,540 57
45,155 17	558 39	1,446 30	2,004 69	598 89	4.949	989 80
123,465 09	436 87	723 83	1,160 70	1,014 45	8.023	802 30
50,139 39	233 97	510 67	744 64	528 22	5.105	510 50
70,378 92	157 07	311 28	468 35	1,015 45	3.152	738 11
104,638 42	188 69	619 64	808 33	943 41	4.670	934 00
66,098 78	162 57	1,118 86	1,281 43	1,395 37	2.704	1,732 50
35,811 09	29 91	1,681 16	1,711 07	316 71	5.358	267 90
30,506 26	1,074 75	1,428 23	2,502 98	1,354 39	1.071	214 20
146,529 48	228 02	940 19	1,168 21	1,102 21	9.115	5,324 12
67,245 15	141 73	462 78	604 51	937 79	4.026	201 30
29,194 62	122 99	479 42	602 41	452 33	3.990	1,201 81
135,667 75	285 12	1,150 88	1,436 00	1,325 14	5.055	1,011 00
49,725 13	403 10	1,481 82	1,884 92	876 15	2.680	268 00
68,358 15	107 56	935 33	1,042 89	1,362 15	8.612	1,701 00
83,721 40	193 02	364 67	557 69	1,992 04	3.678	735 60
69,219 06	515 61	1,160 08	1,675 69	1,711 43	7.356	1,471 20
76,578 51	692 36	23,289 87	23,982 23	1,817 75	1.952	2,100 00
9,912 25	23 95	116 97	140 92	190 34	8.466	325 15
97,449 82	178 04	9,651 83	9,829 87	1,638 86	7.038	4,070 00
116,763 47	507 03	1,154 83	1,661 86	1,368 81	4.072	3,383 54
98,107 24	318 66	620 93	939 59	699 42	9.516	951 70
85,266 22	150 98	325 88	476 86	390 37	8.798	1,759 60
\$17,706,278 68	-	-	-	-	1,371.608	\$377,003 92

## HIGHWAY IMPROVEMENTS AUTHORIZED BY SPECIAL ACTS.

The following contracts were entered into during the year for the construction of town ways under special acts of the Legislature: —

*Westborough.*

March 29, 1921, contract made with George E. Greenough of Acton for the construction of 2,730 feet of town road, under the provisions of chapter 536 of the Acts of 1920, the surface consisting of bituminous macadam 15 feet wide. The proposal amounted to \$13,502.50.

Work completed Aug. 16, 1921.

Expenditure during 1921, \$14,000.

*Clinton.*

March 29, 1921, contract made with Fred E. Ellis of Melrose for the construction of 5,520 feet of town road, under the provisions of chapter 520 of the Acts of 1920, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$28,445.50.

Work completed July 12, 1921.

Expenditure during 1921, \$29,661.03.

*Washington.*

March 29, 1921, contract made with the Luigi C. Carchia Company of Boston for the construction of 2.29 miles of town road, under the provisions of chapter 221 of the General Acts of 1915, as amended, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$87,436.90.

Work completed Nov. 15, 1921.

Expenditure during 1921, \$79,947.16.

*Norton.*

April 5, 1921, contract made with Zebulon L. Canedy of Taunton for the construction of 3,600 feet of town road, under the provisions of chapter 348 of the General Acts of 1919, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$20,656.75.

Work completed July 26, 1921.

Expenditure during 1921, \$19,861.33.



*Dracut.*

June 8, 1921, contract made with the Hanscom Construction Company of Boston for the construction of 3,100 feet of town road, under the provisions of chapter 340 of the General Acts of 1919, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$16,955.

Work completed Sept. 27, 1921.

Expenditure during 1921, \$20,354.72.

*Barre and Oakham.*

Aug. 2, 1921, contract made with the Canton Engineering Company, Inc., of Canton for the construction of 1.737 miles of town road in Barre and Oakham, under the provisions of chapter 221 of the General Acts of 1915, as amended, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$76,069.15.

Work completed Dec. 20, 1921.

Expenditure during 1921, \$67,885.47.

*Dalton and Windsor.*

Aug. 16, 1921, contract made with the Hassam Paving Company of Worcester for the construction of 17,200 feet of town road, under the provisions of chapter 221 of the General Acts of 1915, as amended, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$69,569.04.

Work completed Nov. 22, 1921.

Expenditure during 1921, \$61,753.69.

*Huntington.*

Aug. 16, 1921, contract made with the Holbrook, Cabot & Rollins Corporation of Boston for the construction of a reinforced concrete arch bridge over the Westfield River, under the provisions of chapter 221 of the General Acts of 1915, as amended. This contract covered the work previously included in a contract made with Cordner & Montague of Springfield, said contractors having been notified to discontinue the work,



the chief engineer having certified in writing that the bridge work was unnecessarily and unreasonably delayed.

Work completed Dec. 3, 1921.

Expenditure during 1921, \$75,581.77.

*Holden.*

Aug. 23, 1921, contract made with George E. Greenough of Acton for the construction of 11,546 feet of town road, under the provisions of chapter 521 of the Acts of 1920, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$52,329.80. On Sept. 27, 1921, this contract was extended to cover the construction of an additional length of 4,500 feet of town road, under the provisions of section 34, chapter 90 of the General Laws.

Work about one-fourth completed.

Expenditure during 1921, \$19,306.53.

*Rutland.*

Aug. 3, 1921, contract made with Alexander Palladino of Newton for the construction of 1,525 feet of town road, under the provisions of chapter 337 of the General Acts of 1919, the surface consisting of gravel 18 feet wide. The proposal amounted to \$6,252.

Work completed Nov. 22, 1921.

Expenditure during 1921, \$6,809.03.

*Monterey.*

Sept. 20, 1921, contract made with the Hoyt Construction Company of Holyoke for the construction of 6,400 feet of town road, under the provisions of chapter 571 of the Acts of 1920, the surface consisting of gravel 18 feet wide. The proposal amounted to \$17,327.50.

Work not completed.

Expenditure during 1921, \$17,326.24.

*Middlefield and Peru.*

Oct. 13, 1921, contract made with Carlo Bianchi & Co., Inc., of Framingham for the construction of 5,600 feet of town road in Middlefield and of 5,450 feet of town road in Peru, under

the provisions of chapter 566 of the Acts of 1920, the surface consisting of hardpan 18 feet wide. The proposal amounted to \$38,047.50.

Expenditure during 1921, \$5,971.13.

*Gill.*

Oct. 13, 1921, contract made with Antonio Pallatto of Dracut for the construction of 8,450 feet of town road, under the provisions of chapter 221 of the General Acts of 1915, as amended, the surface consisting of gravel 18 feet wide. The proposal amounted to \$30,767.

Work about one-third completed.

Expenditure during 1921, \$13,235.90.

*Ashfield.*

Nov. 1, 1921, contract made with Alexander Palladino of Newton for the construction of 8,646 feet of town road in Ashfield, under the provisions of chapter 221 of the General Acts of 1915, as amended, the surface consisting of gravel 18 feet wide. The proposal amounted to \$41,712.25.

No work done or payments made in 1921.

*Plainfield and Cummington.*

Nov. 9, 1921, contract made with George T. Seabury, Inc., of Providence, R. I., for the construction of 7,800 feet of town road in Cummington and 13,333 feet of town road in Plainfield, under the provisions of chapter 221 of the General Acts of 1915, as amended, the surface consisting of gravel 18 feet wide. The proposal amounted to \$77,805.25.

Expenditure during 1921, \$292.17.

## FEDERAL AID IN CONSTRUCTING HIGHWAYS.

Section 30 of chapter 81 of the General Laws.

An act to provide that the "United States shall aid the States in the construction of rural post roads, and for other purposes," was passed by Congress, and approved July 11, 1916, the Federal government appropriating and making available during the five following years the total amount of \$75,000,000 for use in aiding the States in the construction of certain roads agreed upon between the Secretary of Agriculture and the highway departments of the various States.

This act provided that one-half of the cost of constructing any project agreed upon between the Secretary of Agriculture and the State highway department shall be provided for from the State or local funds, and that the amount that the Federal government shall pay on any mile of road shall not exceed \$10,000 a mile for its half, exclusive of the cost of bridges of more than 20 feet clear span.

By chapter 67, General Acts of 1917, Massachusetts accepted the provisions of the act of Congress aforesaid, and a general scheme, comprising several different routes which the State proposed to adopt in the expenditure of Federal aid, was submitted in March, 1917, and was approved by the Federal authorities.

Chapter 18, General Acts of 1918, amended section 2 of chapter 67 aforesaid, and also provided that "the treasurer and receiver general is hereby authorized to receive from the United States any and all sums of money payable to this commonwealth under any act of congress for the construction of any highways therein. The sums so received shall be expended upon the order or approval of the Massachusetts highway commission without specific appropriation."

Special Acts of 1918, chapter 18, further authorized the Massachusetts Highway Commission "to expend during the years nineteen hundred and eighteen, nineteen hundred and nineteen and nineteen hundred and twenty the unexpended balance of the five million dollars authorized for the construction of state highways by chapter seven hundred and four of



the acts of nineteen hundred and twelve, and the unexpended balances of such appropriations or authorizations as have been heretofore made by the general court for the construction of specific highways or routes, in accordance with the several provisions of law originally authorizing said expenditures.”

Chapter 89, General Acts of 1919, further amended chapter 67, General Acts of 1917, as amended by chapter 18, General Acts of 1918, by adding a new section providing that “the Massachusetts highway commission is hereby authorized to make any agreements or contracts that may be required to secure federal aid in the construction of highways under the provisions of the act of congress aforesaid, and of all other acts in amendment thereof, or in addition thereto, and may, in such agreements or contracts, provide, among other things, for such labor preferences to honorably discharged soldiers, sailors and marines as are made necessary by federal legislation, and may provide that no other preference or discrimination among citizens of the United States shall be made in connection with the expenditure of any money received from the federal government by virtue of the said legislation.”

Chapter 81 of the General Laws provides in section 30 that “The division may make all contracts and agreements and do all other things necessary to co-operate with the United States in the construction and maintenance of rural highways, under an act of congress approved on July eleventh, nineteen hundred and sixteen, entitled ‘An Act to provide that the United States shall aid the states in the construction of rural post roads, and for other purposes’, and submit such plans, estimates and programs for the improvement of highways as will meet the requirements of the secretary of agriculture under said act, and it may use therefor any funds which may be available for the construction and maintenance of state highways, and may make any agreements or contracts that may be required to secure federal aid in the construction of highways under the provisions of the act of congress aforesaid, and of all other acts in amendment thereof, or in addition thereto, and may, in such agreements or contracts, provide, among other things, for such labor and preferences to honorably discharged soldiers, sailors and marines as are made necessary by federal legislation, and

may provide that no other preference or discrimination among citizens of the United States shall be made in connection with the expenditure of any money received from the federal government by virtue of the said legislation, and also any money received from the United States on account of the construction of highways. The division may also, for the purpose of securing federal aid, use any money appropriated by a county, city or town for the construction of a way or any part thereof for which federal aid may be secured, and make contracts or agreements involving the expenditure of said money, provided the county commissioners or the selectmen or duly authorized officials of the city or town have agreed in writing to pay the money thus appropriated upon the order of the division. The division may also maintain the roads constructed under this section or said act of congress, from any money appropriated by the general court for the maintenance of state highways or for the repair or maintenance of other public ways."

The act of Congress, approved July 11, 1916, was amended by an "Act making appropriations for the services of the Post Office Department for the fiscal year ending June 30, 1920, and for other purposes," approved Feb. 28, 1919. Under the amended act additional amounts were appropriated as follows: the sum of \$50,000,000 for the fiscal year ending June 30, 1919; \$75,000,000 for the fiscal year ending June 30, 1920; \$75,000,000 for the fiscal year ending June 30, 1921.

The act of 1919 also provided that section 6 of said act of Congress, approved July 11, 1916, "be further amended so that the limitation of payments not to exceed \$10,000 per mile, exclusive of the cost of bridges of more than twenty feet clear span, which the Secretary of Agriculture may make, be, and the same is, increased to \$20,000 per mile."

Further legislation is contained in the Federal Highway Act,<sup>1</sup> approved Nov. 9, 1921, amending the act of Congress approved July 11, 1916, as amended by the act approved Feb. 28, 1919.

The Federal Highway Act aforesaid provides that the Secretary of Agriculture, after making the deduction authorized by section 2 of said act, shall apportion the remainder of the appropriation made for expenditure under the provisions of

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<sup>1</sup> Printed in the Appendix to this report, pages 107-115.



the act for the fiscal year among the several States in the following manner: —

One-third in the ratio which the area of each State bears to the total area of all the States; one-third in the ratio which the population of each State bears to the total population of all the States, as shown by the latest available Federal census; one-third in the ratio which the mileage of rural delivery routes and star routes in each State bears to the total mileage of rural delivery and star routes in all the States at the close of the next preceding fiscal year, as shown by the certificate of the Postmaster-General, which he is directed to make and furnish annually to the Secretary of Agriculture.

It appears from a certificate of the Secretary of Agriculture, dated Nov. 18, 1921, that of the appropriation of \$75,000,000 made by the Federal Highway Act aforesaid for the fiscal year ending June 30, 1922, \$25,000,000 is made immediately available and \$50,000,000 is to become available Jan. 1, 1922, and after deducting \$1,875,000, estimated to be necessary for administering the provisions of said act, the sum apportioned to Massachusetts as immediately available is \$365,392.01, and the sum to become available Jan. 1, 1922, is \$730,784.03, making the total apportionment to Massachusetts under said act \$1,096,176.04.

The total of the apportionments under previous acts of Congress was \$4,052,565.09, making a total apportionment to this State (including the sum available Jan. 1, 1922) of \$5,148,741.13.

The total amount received by Massachusetts from 1916 to Nov. 30, 1921, was \$1,092,258.74.

Projects to the number of 30 have been prepared in addition to those shown in the report of the Department for 1920. The total mileage included in the various Federal-aid road projects in this State, from the commencement of work of this character to Nov. 30, 1921, inclusive, was 250.949. The mileage in the various counties is: —



COUNTY.	Miles.
Barnstable . . . . .	30.605
Berkshire . . . . .	29.078
Bristol . . . . .	7.054
Essex . . . . .	46.665
Franklin . . . . .	15.961
Hampden . . . . .	15.992
Hampshire . . . . .	14.644
Middlesex . . . . .	28.302
Norfolk . . . . .	12.546
Plymouth . . . . .	9.196
Worcester . . . . .	40.906
Total . . . . .	250.949

## STATEMENT OF FEDERAL-AID ROAD PROJECTS.

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
1	Acushnet-Fairhaven . . .	2.182	\$21,820 00	\$21,820 00	Work completed.
2	Hanover . . . .	2.708	19,480 36	19,480 36	Work completed.
3	Malden-Melrose-Saugus . .	1.162	11,620 00	11,620 00	Work completed.
4	Danvers . . . .	1.325	15,460 22	15,460 22	Work completed.
5	Windsor-Dalton . . . .	3.240	59,216 30	41,665 19	Work completed.
6	Sandwich . . . .	1.818	10,678 02	10,678 02	Work completed.
7	Cummington . . . .	4.659	86,816 53	33,540 52	Work completed.
8	Athol-Petersham . . . .	7.016	90,074 51	90,074 51	Work completed.
9	Saugus . . . .	3.122	65,472 27	34,865 79	Work completed.
10	Braintree . . . .	2.420	40,554 80	30,819 23	Work completed.
11	Concord-Acton-Littleton . .	4.849	77,600 87	77,600 87	Work completed.
12	Ipswich . . . .	2.173	21,851 50	21,851 50	Work completed.
13	Littleton-Groton . . . .	6.450	130,504 25	88,987 52	Work completed.
14	Barnstable . . . .	3.331	22,687 65	18,991 54	Work completed.
15	Norwell-Hingham . . . .	4.380	59,501 75	48,957 32	Work completed.
17	Lynnfield-Peabody . . . .	1.794	35,880 00	—	Work completed.
18	Lunenburg . . . .	2.797	55,940 00	33,903 53	Work completed.
19	Taunton . . . .	2.116	42,320 00	22,982 74	Work completed.
20	Tewksbury . . . .	2.909	35,211 82	26,098 73	Work completed.
21	Pittsfield-Hancock . . . .	3.637	72,740 00	45,587 06	Work completed.
22	Greenfield-Bernardston . .	6.426	88,270 71	31,294 14	Work completed.
23	Great Barrington . . . .	2.123	31,348 89	31,348 89	Work completed.
24	Seekonk . . . .	2.756	19,527 75	19,527 75	Work completed.
25	Billerica . . . .	.578	38,389 77	7,573 20	Work completed.
26	Greenfield-Shelburne:				
	Section 1 . . . .	5.134	102,680 00	46,190 57	Work completed.
	Section 2 . . . .	4.401	88,020 00 <sup>1</sup>	—	Project approved.
27	Hamilton-Wenham . . . .	1.766	20,207 27	20,207 27	Work completed.
28	Lanesborough:				
	Section A . . . .	.990	19,780 00	15,626 41	Work completed.
	Section B . . . .	2.680	53,800 00 <sup>1</sup>	—	Project approved.
29	Ware . . . .	2.626	46,557 55	26,112 27	Work completed.
30	Brimfield . . . .	4.238	75,889 00 <sup>1</sup>	—	Project approved.
31	Danvers-Peabody . . . .	1.107	22,140 00	17,222 31	Work completed.
32	Huntington . . . .	3.078	102,103 37 <sup>1</sup>	25,828 43	Work under way.

<sup>1</sup> Signed agreements.

STATEMENT OF FEDERAL-AID ROAD PROJECTS — *Continued.*

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
33	Acton-Littleton:				
	Section A . . . .	2.182	\$43,640 00 <sup>1</sup>	—	Work completed.
	Section B . . . .	1.624	25,847 25 <sup>1</sup>	—	Work completed.
34	Dudley . . . .	1.359	27,180 00	\$20,813 97	Work completed.
35	Haverhill-Methuen . .	4.544	90,880 00	—	Project approved.
36	Eastham-Wellfleet-Truro- Provincetown:				
	Section A . . . .	10.690	91,347 85	74,237 30	Work completed.
	Section B . . . .	6.719	75,935 60 <sup>1</sup>	—	Project approved.
	Section C . . . .	8.047	86,130 51 <sup>1</sup>	—	Work under way.
37	Egremont . . . .	1.164	20,579 07	20,579 07	Work under way.
38	Peabody-Danvers . . .	2.827	56,540 00 <sup>1</sup>	—	Work completed.
39	Williamstown-New Ashford- Lanesborough:				
	Section A . . . .	.020	14,132 25 <sup>1</sup>	—	Work completed.
	Section B . . . .	3.323	66,460 00	—	Project approved.
	Section C . . . .	4.560	91,200 00	—	Project approved.
40	East Brookfield . . .	1.011	20,220 00 <sup>1</sup>	—	Work completed.
41	Ashby . . . .	1.250	22,141 03	\$15,956 92	Work completed.
42	Washington . . . .	2.291	45,820 00	14,998 52	Work completed.
43	Leicester . . . .	.638	12,760 00	9,757 07	Work completed.
44	Goshen-Cummington-Wind- sor:				
	Section A . . . .	1.494	29,880 00	—	Project approved.
	Section B . . . .	1.479	50,538 14	—	Project approved.
	Section C . . . .	3.780	82,915 42	—	Project approved.
45	Palmer:				
	Sections A and C . .	1.795	35,900 00 <sup>1</sup>	—	Work completed.
	Section B . . . .	.530	10,600 00	—	Project approved.
46	Upton-Hopedale:				
	Section A . . . .	1.672	33,440 00 <sup>1</sup>	—	Work completed.
	Section B . . . .	2.589	51,780 00	—	Project approved.
47	Barre-Oakham . . .	1.737	38,037 25 <sup>1</sup>	—	Work under way.
49	Middleborough . . .	2.108	25,461 70	—	Project approved.
50	Lunenburg . . . .	1.763	35,260 00	—	Project approved.
51	Mendon-Uxbridge:				
	Section A . . . .	1.959	39,180 00 <sup>1</sup>	—	Work completed.
	Section B . . . .	2.504	50,080 00	—	Project approved.

<sup>1</sup> Signed agreements.



STATEMENT OF FEDERAL-AID ROAD PROJECTS — *Concluded.*

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
52	Oxford . . . . .	3.208	\$64,160 00 <sup>1</sup>	—	Work completed.
53	East Brookfield-Spencer-West Brookfield-Brookfield:				
	Section A . . . . .	.890	17,800 00 <sup>1</sup>	—	Work completed.
	Section B . . . . .	1.682	33,640 00 <sup>1</sup>	—	Work completed.
54	Leicester:				
	Section A . . . . .	.829	16,580 00 <sup>1</sup>	—	Work completed.
	Section B . . . . .	2.691	53,820 00	—	Project approved.
55	Quincy . . . . .	.549	10,980 00 <sup>1</sup>	—	Work completed.
56	Stoughton . . . . .	2.141	42,820 00 <sup>1</sup>	—	Work completed.
57	Winchester-Woburn . . . . .	3.042	59,131 31 <sup>1</sup>	—	Work completed.
58	Littleton . . . . .	1.345	26,900 00 <sup>1</sup>	—	Work completed.
59	Egremont . . . . .	.784	15,680 00 <sup>1</sup>	—	Work under way.
60	Middleton-Danvers . . . . .	1.907	38,224 70 <sup>1</sup>	—	Work completed.
61	Winchendon-Templeton . . . . .	5.393	107,860 00 <sup>1</sup>	—	Work under way.
62	Danvers-Topsfield:				
	Section A . . . . .	3.009	60,180 00 <sup>1</sup>	—	Project approved.
	Section B . . . . .	3.513	83,347 62	—	Project approved.
63	Essex-Ipswich . . . . .	4.489	89,780 00	—	Project approved.
64	Norwood . . . . .	1.065	21,300 00	—	Project approved.
65	North Adams . . . . .	1.638	32,760 00 <sup>1</sup>	—	Work completed.
66	Uxbridge . . . . .	1.168	23,360 00	—	Project approved, 67 and 68 withdrawn.
69	Haverhill . . . . .	2.657	53,140 00	—	Project approved.
70	Palmer . . . . .	2.550	51,000 00	—	Project approved.
71	Wrentham . . . . .	1.846	36,940 00	—	Project approved.
72	Walpole . . . . .	3.078	61,560 00	—	Project approved.
73	Southwick . . . . .	6.879	135,027 64	—	Project approved.
74	Becket . . . . .	.156	16,233 38	—	Project forwarded.
75	Topsfield-Ipswich-Rowley- Newbury:				
	Section A . . . . .	10.207	207,919 00	—	Project forwarded.
	Section B . . . . .	.350	7,000 00	—	Project forwarded.
76	Norfolk . . . . .	1.447	28,940 00	—	Project forwarded.
77	Merrimac . . . . .	1.025	20,400 00	—	Project forwarded.
78	Burlington . . . . .	3.761	75,220 00	—	Project forwarded.
	Total . . . . .	250.949	\$4,449,734 88	\$1,092,258 74	

<sup>1</sup> Signed agreements.

## BRIDGES.

During the year the Division has prepared designs and plans for, and done other work relating to, bridges throughout the Commonwealth. The various towns, the localities therein, the character of the structure and other details are as follows: —

## BRIDGES BUILT OR CONTRACTED FOR.

Town.	Locality.	Character of Structure.
Barre . . . .	Over canal . . . .	24-foot concrete slab.
Barre . . . .	Over Ware River . . . .	30-foot concrete beam.
Bernardston . . . .	Over Couch Brook . . . .	35-foot concrete beam.
Cummington . . . .	Over east branch of Westfield River.	100-foot concrete arch.
Cummington . . . .	Over north branch of Swift River.	32-foot concrete beam.
Huntington . . . .	Over Westfield River . . . .	3-span concrete arch, 1 of 75 feet and 2 of 55 feet each.
Lanesborough . . . .	Over Town Brook . . . .	18-foot concrete beam.
Leicester . . . .	At Collier's Corner . . . .	Concrete retaining wall.
Littleton . . . .	Over Beaver Brook . . . .	15-foot concrete slab.
Littleton . . . .	Over Beaver Brook . . . .	24-foot concrete beam.
Middleton (Danvers line).	Over Ipswich River . . . .	34-foot concrete beam.
New Ashford . . . .	Over brook . . . .	12-foot concrete slab.
New Ashford . . . .	Over east branch of Green River.	16-foot concrete beam.
New Ashford . . . .	Over east branch of Green River.	23½-foot concrete beam.
New Ashford . . . .	Over east branch of Green River.	16-foot concrete beam.
New Ashford . . . .	Over east branch of Green River.	16-foot concrete beam.
New Ashford . . . .	Over east branch of Green River.	28-foot concrete beam.
New Ashford . . . .	Over east branch of Green River.	24-foot concrete beam.
Norton . . . .	Over Main Street Flume . . . .	11-foot concrete slab.
Oxford . . . .	- - -	Head wall for arch culvert.
Ware . . . .	Over Muddy River . . . .	20½-foot concrete beam.
Ware . . . .	Over Flat Brook . . . .	13-foot concrete slab.
Washington . . . .	Over west branch of Westfield River.	16-foot concrete beam.
Williamstown . . . .	Over New Ashford Brook . . . .	30-foot concrete beam.
Williamstown . . . .	Over Roaring Brook . . . .	13½-foot concrete slab.
Winchendon . . . .	Over Millers River . . . .	40-foot wooden pile.
Winchendon . . . .	Over branch of Millers River	16-foot concrete beam.
Winchendon . . . .	Over branch of Otis River . . . .	8-foot concrete culvert.
Woburn . . . .	Over brook . . . .	8-foot concrete slab.

## ALTERATIONS, REPAIRS AND EXTENSIONS TO BRIDGES COMPLETED IN 1921.

TOWN.	Locality.	Character of Work.
Brookfield . . .	Over Stone Brook . . .	Extending 11-foot concrete slab.
Buckland (Charlemont line).	Scott's bridge . . .	Cleaning and painting.
Fall River . . .	Over Taunton Great River, Brightman Street bridge.	Cleaning and painting.
Granby . . .	— — —	Repairing wooden truss bridge.
Lanesborough . . .	Over Town Brook . . .	Extension of 18-foot concrete beam.
Newburyport (Salisbury line).	Over Merrimack River . . .	Repairs to fender pier.
North Adams . . .	Greylock bridge . . .	Cleaning and painting.
Oxford . . .	Over French or Maanexet River.	Extension of 16-foot concrete arch.
West Brookfield . . .	Over Tannery Brook . . .	Extension of 20-foot concrete beam.

## CONTEMPLATED BRIDGES AND STRUCTURES.

*Plans, Studies or Estimates made.*

TOWN.	Locality.	Character of Structures.
Becket . . .	Over Sparks Brook . . .	Extension of 13-foot concrete beam.
Becket . . .	Over west branch of Westfield River.	35-foot concrete beam.
Becket . . .	Over west branch of Westfield River.	25½-foot concrete beam.
Becket . . .	Over west branch of Westfield River.	25-foot concrete beam.
Bernardston . . .	Over Falls River . . .	60-foot concrete arch.
Bourne . . .	Over New York, New Haven & Hartford Railroad.	34½-foot concrete beam.
Cummington . . .	Over east branch of Westfield River.	80-foot concrete arch.
Cummington . . .	Over Westfield River . . .	38-foot concrete beam.
Cummington . . .	Over branch of Westfield River.	36-foot concrete beam.
Essex . . .	One causeway . . .	Riprap on work.
Falmouth . . .	Over Coonemosset River . . .	12½-foot concrete slab.
Gill . . .	Over brook . . .	11-foot concrete slab.
Goshen . . .	Over Stones Brook . . .	30-foot concrete beam.
Goshen . . .	Over Swift River . . .	33-foot concrete beam.
Grafton . . .	Over brook . . .	12-foot concrete slab.
Haverhill . . .	Amesbury Road . . .	Retaining wall.
Hingham . . .	Otis and Summer streets . . .	Retaining wall and 2-span concrete beam.
Rowley (Newburyport Turnpike).	Over Mill River . . .	Concrete extension of 18-foot stone arch.
Southwick . . .	Over brook . . .	13½-foot concrete beam.
Southwick . . .	Over Uncle Oliver's Brook	23½-foot concrete beam.



CONTEMPLATED BRIDGES AND STRUCTURES — *Continued.**Plans, Studies or Estimates made — Concluded.*

TOWN.	Locality.	Character of Structure.
Sutton . . . .	Over Cold Spring Brook . .	14-foot concrete beam.
Topsfield (Newburyport Turnpike).	— —	Concrete retaining wall.
Topsfield (Newburyport Turnpike).	— —	6-foot by 9-foot concrete culvert and 3.5-foot by 5-foot cattle pass.
Topsfield (Newburyport Turnpike).	Over Ipswich River . .	Concrete alteration to 32-foot stone arch.
Topsfield (Newburyport Turnpike).	Over Howlett Street . .	20-foot concrete beam.
Topsfield (Newburyport Turnpike).	Over Mile Brook . .	10-foot concrete slab.
Wayland . . . .	Over Sudbury River . .	80-foot 2-span concrete beam.
Westfield . . . .	Over Westfield River . .	35-foot concrete beam; also strengthening the present Frog Hole bridge.
Windsor . . . .	Over branch of Housatonic River.	Addition to fence.

*Examinations, Reports, Estimates, etc., made at the Request of Cities and Towns.*

CITIES AND TOWNS.	Locality.	Character of Work.
Acton <sup>1</sup> . . . .	Over Assabet River . .	2-span concrete through girder; spans 32 feet each.
Ashland <sup>1</sup> . . . .	Over Sudbury River . .	25-foot concrete beam.
Belchertown (Ware line).	Over Swift River . .	Examination and report on Red bridge; investigation of stresses of 38-foot wooden "A" frame.
Dana . . . .	Over Ware River . .	19-foot concrete beam; alternate, of wood.
Dedham . . . .	Over Mother Brook, Washington Street.	19-foot concrete beam.
Dighton (Somerset line).	Over Broad Cove . .	2-span concrete beam, 28 feet each.
East Bridgewater <sup>1</sup> .	Over Salisbury River, Pleasant Street.	30-foot concrete beam, and restoration of 16-foot stone arch at Central Street.
Eastham . . . .	Over Broad Meadow Creek .	For repairing present bridge.
Framingham . . .	Over Boston & Albany Railroad, Fountain Street.	Condition of bridge.
Huntington . . .	Over Westfield River . .	Condition of bridge.
Maynard . . . .	Over Assabet River . .	Widening of stone arch, 2 spans of 27 feet each.
Middleborough (Bridge-water line).	Over Taunton River . .	Woodard's bridge, and Titicut (or Sturtevant's) bridge.
Newbury . . . .	Over Plum Island River .	Condition of bridge and reconstruction necessary.
Northbridge . . .	Over Blackstone River . .	2-span concrete beam, 39 feet each; alternate, 1-span concrete arch, 78 feet; alternate, 2-span concrete beam, 47 feet each.
Orange . . . .	At Slovan's Mill . .	Condition of bridge and reconstruction.
Pembroke . . . .	Furnace and Oldham ponds	6-foot by 5-foot concrete slab culvert.
Plymouth . . . .	Over Eel River . .	27½-foot concrete beam; alternate, with abutment of plain concrete.
Shelburne (Buckland line).	Over Deerfield River . .	22-foot iron truss.
Somerset (Swansea line).	Over Lee River . .	Condition of bridge.

<sup>1</sup> Construction supervision.

CONTEMPLATED BRIDGES AND STRUCTURES — *Continued.**Examinations, Reports, Estimates, etc., made at the Request of Cities and Towns — Concluded.*

CITIES AND TOWNS.	Locality.	Character of Work.
Sunderland (Deerfield line).	Over Connecticut River . .	Strengthening floor.
Taunton . . . .	Over Taunton River . . .	Advice to city officials.
Townsend . . . .	Over Willard Brook . . .	Condition of bridge and reconstruction.
Uxbridge . . . .	Over Blackstone River . .	Analysis of truss.
Walpole . . . .	Washington Street, Mill Pond.	Restoration of 2-span stone arch, spans 15 and 16 feet, respectively.
Walpole . . . .	Over New York, New Haven & Hartford Railroad.	Condition of floor and repaving with creosoted wood block.
West Stockbridge .	Over Williams River . . .	Condition of bridge and reconstruction.
Woburn <sup>1</sup> . . . .	Over Aberjona River . . .	18-foot concrete beam.

<sup>1</sup> Construction supervision.*Examinations, Reports, Estimates, etc., in Accordance with Certain Legislation.*

CITIES AND TOWNS.	Locality.	Character of Work.
Gloucester . . . .	Over Lobster Cove (ch. 52, Res. of 1920).	Condition of present bridge; plans and estimates for new structure.
Wilbraham . . . .	Underpass, Boston & Albany Railroad (ch. 72, Res. of 1920).	Examination of site and study of proposed designs.

*Examinations, Reports, Estimates, etc., at the Request of County Commissioners.*

CITIES AND TOWNS.	Locality.	Character of Work.
Dover (Needham line)	Over Charles River . . .	A 2-span concrete beam, spans 65 feet each; alternate, 65-foot concrete arch.
Dracut . . . . .	Over Beaver Brook . . .	2-span wall and arch extension, spans 12 feet each.
Gloucester . . . .	Good Harbor Beach . . .	Plans submitted for beam and slab bridges.
Hadley (Northampton line).	Over Connecticut River . .	Strength of floor.
Norfolk . . . . .	Over Stop River . . . .	9½-foot concrete arch.
Williamsburg (Haydenville Underpass).	- - -	Condition and study of reconstruction.

CONTEMPLATED BRIDGES AND STRUCTURES — *Concluded.*  
*Examinations and Reports by Direction of the Department.*

CITIES AND TOWNS.	Locality.	Subject.
Brookfield . . .	Dunn Brook bridge . .	Damage by truck.
Cumington . . .	Old covered wooden bridge	Condition of bridge.
Newbury . . .	Over Parker River . .	Condition of bridge.
Norfolk . . .	Main Street culvert . .	Damage by truck.
North Adams . .	Culvert . . . . .	Raising head walls.
North Adams . .	Over Hoosic River . .	Condition of bridge.
Russell . . . .	- - - - -	Reconstruction of retaining wall.
Shelburne (Buckland line).	Over Deerfield River . .	Cleaning and painting bridge.
Truro . . . . .	Pamet River . . . . .	Culvert, tidal flow.
Upton . . . . .	Flume . . . . .	Reconstruction.
Waltham . . . .	Double culvert . . . .	Condition.
Wareham (Marion line)	Over Buttermilk Bay . .	Condition of old bridge being used during construction of new bridge.
Westminster . .	Three bridges . . . .	Condition.

BRIDGE OVER THE MERRIMACK RIVER BETWEEN NEWBURY-  
 PORT AND SALISBURY.

The charge of this bridge was placed in the Massachusetts Highway Commission, and the same made a State highway by the provisions of chapter 716, Acts of 1912, which also provided that the expense of keeping the bridge in good repair for travel, of operating the draw, and of maintaining the bridge shall be paid by the Commonwealth.

The total number of draw openings at this bridge from January to December, inclusive, during each of the years 1918-21, were: —

YEAR.	Openings.
1918 . . . . .	223
1919 . . . . .	209
1920 . . . . .	199
1921 . . . . .	329

The expenditures for 1921 were \$7,253.83.

The total expenditure from 1912 to 1921, inclusive, was \$69,957.44.



BRIDGE OVER TAUNTON GREAT RIVER BETWEEN FALL RIVER  
AND SOMERSET.

The charge of this bridge was placed in the Massachusetts Highway Commission, and the same made a State highway by the provisions of chapter 717, Acts of 1912, which also provided that the expense of keeping the bridge in good repair for travel, and of operating the draw and maintaining the bridge, shall be paid by the Commonwealth; furthermore, that the expense incurred and to be incurred by the county of Bristol in restoring the bridge to a sound condition and in making it suitable for travel shall be borne by the Commonwealth.

The total number of draw openings at this bridge from January to December, inclusive, during each of the years 1918-21, were: —

YEAR.	Openings.
1918 . . . . .	759
1919 . . . . .	657
1920 . . . . .	1,860
1921 . . . . .	2,539

The expenditures for 1921 were \$16,863.57.

The total expenditure from 1912 to 1921, inclusive, was \$155,572.80.

CONSTRUCTION AND REPAIR OF TOWN AND COUNTY  
WAYS.

Chapter 90 of the General Laws was amended by section 1 of chapter 112 of the Acts of 1921, as follows: —

SECTION 1. Chapter ninety of the General Laws is hereby amended by striking out section thirty-four and inserting in place thereof the following: — *Section 34.* The fees and fines received under the preceding sections, together with all other fees received by the registrar or any other person under the laws of the commonwealth relating to the use and operation of motor vehicles, shall be paid by the registrar or by the person collecting the same into the treasury of the commonwealth. Out of said fees and fines there shall be appropriated such amount as is necessary to carry out the provisions of law regulating the use of motor vehicles. The balance then remaining may be appropriated for expenditure under the direction of the division for maintaining, repairing, improving and constructing town and county highways together with any money which any town or county may appropriate for said purpose to be used on the same highway, and said way shall remain a town or county way; for expenditure under the direction of the division for maintaining, repairing and improving state highways, and for constructing state highways to an amount not exceeding that part of the cost thereof which is not assessed upon the counties under the provisions of section nine of chapter eighty-one; and for meeting the commonwealth's share of the expenses of the metropolitan district commission for maintaining boulevards in the metropolitan parks district under section fifty-six of chapter ninety-two.

During the year the Division has contracted for work to be done in the towns named in the following table, which also shows the type of road, the length contracted for, and the allotments or contributions by the State, towns and counties: —

COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
<i>Barnstable County.</i>					
Brewster . . . .	\$3,000 00	\$3,000 00	—	Bituminous concrete . . . .	6,000
Falmouth . . . .	10,000 00	10,000 00	—	Bituminous concrete . . . .	4,000
Sandwich . . . .	1,000 00	1,000 00	—	Gravel . . . . .	3,600
<i>Berkshire County.</i>					
Alford . . . . .	400 00	400 00	—	Gravel . . . . .	200
Becket . . . . .	300 00	300 00	—	Gravel . . . . .	600
Egremont . . . .	1,000 00	1,000 00	—	Gravel . . . . .	1,095
Hancock . . . . .	2,000 00	—	—	Gravel . . . . .	6,189
Monterey . . . .	400 00	400 00	—	Gravel . . . . .	1,200
New Marlborough .	2,500 00	2,500 00	\$1,000 00	Gravel . . . . .	5,535
Otis . . . . .	500 00	500 00	—	Gravel . . . . .	18,500
Richmond . . . .	1,500 00	1,000 00	—	Gravel . . . . .	900
Sheffield . . . .	1,000 00	1,000 00	1,000 00	Repair and oiling . . . .	16,100
Tyringham . . . .	1,000 00	1,000 00	1,000 00	Waterbound macadam . . . .	1,000
West Stockbridge .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	2,900
<i>Bristol County.</i>					
Berkley . . . . .	1,500 00	1,500 00	1,000 00	Repair and oiling . . . .	33,205
Dartmouth . . . .	3,000 00	3,000 00	—	Bituminous macadam . . . .	2,650
Dighton . . . . .	3,000 00	3,000 00	—	Waterbound macadam . . . .	1,884
Dighton . . . . .	5,000 00	6,000 00	5,000 00	Bituminous macadam . . . .	5,750
Easton . . . . .	4,000 00	4,000 00	—	Bituminous macadam . . . .	1,785
Mansfield . . . .	7,500 00	7,500 00	7,500 00	Bituminous macadam . . . .	3,406
Rehoboth . . . . .	3,000 00	3,000 00	3,000 00	Gravel . . . . .	7,251
Seekonk . . . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam . . . .	1,350
Swansea . . . . .	2,750 00	2,750 00	2,750 00	Waterbound macadam . . . .	1,575
Westport . . . . .	1,500 00	3,000 00	1,500 00	Bituminous macadam . . . .	2,470
<i>Essex County.</i>					
Andover . . . . .	7,018 29	5,000 00	5,000 00	Bituminous macadam . . . .	3,200
Danvers . . . . .	10,000 00	10,000 00	10,000 00	Bituminous macadam . . . .	5,306
Essex . . . . .	1,000 00	2,500 00	—	Repair and oiling . . . .	31,680
Georgetown . . . .	2,500 00	2,500 00	2,500 00	Gravel . . . . .	4,300
Ipswich . . . . .	4,000 00	4,000 00	4,000 00	Gravel . . . . .	19,600
Lynnfield . . . .	10,000 00	10,000 00	10,000 00	Bituminous macadam . . . .	3,726
Marblehead . . . .	20,000 00	40,000 00	20,000 00	Bituminous madacam . . . .	11,053
Rowley . . . . .	500 00	500 00	500 00	Gravel . . . . .	750
Swampscott . . . .	7,500 00	15,000 00	7,500 00	Bituminous macadam . . . .	3,750
West Newbury . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	1,700



COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Contracted for (Feet).
	State.	Town.	County.		
<i>Franklin County.</i>					
Ashfield . . . .	\$1,000 00	\$1,000 00	\$1,000 00	Gravel . . . . .	1,400
Bernardston . . .	8,000 00	8,000 00	-	Bituminous macadam .	1,750
Buckland . . . .	1,500 00	1,500 00	-	Gravel . . . . .	1,000
Colrain . . . . .	1,600 00	1,600 00	-	Gravel . . . . .	2,750
Conway . . . . .	2,000 00	2,000 00	-	Gravel . . . . .	1,400
Montague . . . .	5,000 00	5,000 00	-	Gravel . . . . .	5,500
Orange . . . . .	1,000 00	1,000 00	-	Gravel . . . . .	1,600
Shelburne . . . .	400 00	400 00	-	Repair and oiling . .	8,504
Warwick . . . . .	400 00	400 00	-	Gravel . . . . .	400
Wendell . . . . .	500 00	500 00	-	Gravel . . . . .	450
<i>Hampden County.</i>					
Agawam . . . . .	20,000 00	20,000 00	-	Bituminous macadam .	5,860
Blandford . . . .	1,000 00	1,000 00	-	Waterbound macadam .	975
Chester . . . . .	1,000 00	1,000 00	-	Gravel . . . . .	2,050
East Longmeadow .	500 00	500 00	-	Gravel . . . . .	3,700
Monson . . . . .	2,500 00	2,500 00	-	Bituminous macadam .	2,100
Southwick . . . .	500 00	500 00	-	Gravel . . . . .	600
Tolland . . . . .	300 00	300 00	-	Gravel . . . . .	350
West Springfield .	10,000 00	20,000 00	-	Cement concrete . . .	2,200
Wilbraham . . . .	5,000 00	5,000 00	-	Bituminous macadam .	2,200
<i>Hampshire County.</i>					
Belchertown . . .	2,000 00	3,200 00	2,000 00	Gravel . . . . .	2,850
Easthampton . . .	1,500 00	1,500 00	-	Gravel . . . . .	1,500
Hadley . . . . .	15,000 00	15,000 00	-	Bituminous macadam .	9,500
Prescott . . . . .	400 00	400 00	-	Concrete culvert and ap- proaches.	250
Southampton . . .	500 00	500 00	-	Gravel . . . . .	600
<i>Middlesex County.</i>					
Acton . . . . .	10,000 00	10,000 00	10,000 00	Bituminous macadam .	4,400
Ashby . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	2,000
Ashland . . . . .	9,000 00	9,000 00	9,000 00	Bituminous macadam .	5,326
Ashland . . . . .	2,500 00	2,500 00	2,500 00	Concrete bridge and ap- proaches.	534
Bedford . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	1,500
Bedford . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	2,400
Boxborough . . . .	700 00	700 00	700 00	Gravel . . . . .	800
Burlington . . . .	800 00	800 00	800 00	Repair and oiling . .	17,160
Burlington . . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	2,300

COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Contracted for (Feet).
	State.	Town.	County.		
<i>Middlesex County — Con.</i>					
Carlisle . . .	\$500 00	\$500 00	\$500 00	Gravel . . . .	1,500
Chelmsford . .	12,000 00	12,000 00	12,000 00	Bituminous macadam .	5,800
Dracut . . .	2,000 00	2,000 00	2,000 00	Bituminous macadam .	750
Dunstable . .	1,750 00	1,750 00	1,750 00	Repair and oiling . .	38,016
Framingham . .	7,000 00	7,000 00	7,000 00	Bituminous macadam .	2,400
Framingham . .	3,000 00	3,000 00	3,000 00	Gravel . . . .	4,300
Holliston . .	2,500 00	2,500 00	2,500 00	Gravel . . . .	4,000
Hopkinton . .	3,000 00	3,000 00	3,000 00	Waterbound macadam .	2,000
Hudson . . .	3,000 00	3,000 00	3,000 00	Gravel . . . .	5,600
Lincoln . . .	7,500 00	7,500 00	7,500 00	Bituminous macadam .	3,286
Littleton . .	3,000 00	3,000 00	3,000 00	{ Bituminous macadam .	576
Maynard . . .	3,000 00	3,000 00	3,000 00	{ Gravel . . . .	6,500
Natick . . .	2,000 00	2,000 00	2,000 00	Gravel . . . .	4,000
Natick . . .	2,000 00	2,000 00	2,000 00	Gravel . . . .	1,900
North Reading .	900 00	900 00	900 00	Repair and oiling . .	49,840
Sherborn . . .	1,500 00	1,500 00	1,500 00	Gravel . . . .	2,700
Stoneham . . .	1,700 00	1,700 00	1,700 00	Bituminous macadam .	1,310
Stow . . .	500 00	500 00	500 00	Gravel . . . .	1,300
Stow . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	3,000
Sudbury . . .	598 43	598 43	598 43	Repair and oiling . .	29,830
Sudbury . . .	2,000 00	2,000 00	2,000 00	Gravel . . . .	4,000
Tyngsborough .	500 00	500 00	500 00	Gravel . . . .	1,320
Wakefield . .	2,000 00	2,000 00	2,000 00	Bituminous macadam .	1,000
Wayland . . .	2,700 00	2,700 00	2,700 00	Bituminous macadam .	654
Wayland . . .	2,500 00	7,000 00	2,500 00	Repair and oiling . .	50,688
Westford . . .	5,000 00	5,000 00	5,000 00	{ Bituminous macadam .	600
Wilmington . .	2,000 00	2,000 00	2,000 00	{ Plutonic pavement .	600
Wilmington . .	2,000 00	2,000 00	2,000 00	{ Repair and oiling . .	20,800
Wilmington . .	2,000 00	2,000 00	2,000 00	Waterbound macadam .	2,000
<i>Nantucket County.</i>					
Nantucket . . .	3,500 00	3,500 00	—	Bituminous concrete .	2,332
<i>Norfolk County.</i>					
Bellingham . .	1,000 00	1,000 00	1,000 00	Gravel . . . .	2,000
Bellingham . .	2,000 00	—	—	Repair and oiling . .	24,400
Canton . . .	15,000 00	15,000 00	15,000 00	Bituminous macadam .	3,584
Franklin . . .	4,000 00	4,000 00	4,000 00	Gravel . . . .	5,000
Holbrook . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	2,510
Medfield . . .	1,500 00	1,500 00	1,500 00	Gravel . . . .	1,420
Medway . . .	3,000 00	4,000 00	3,000 00	Gravel . . . .	7,420

COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
<i>Norfolk County—</i>					
Con.					
Millis . . . .	\$3,000 00	\$3,000 00	\$3,000 00	Gravel . . . . .	4,270
Millis . . . .	1,300 00	1,400 00	1,300 00	Repair and oiling . . . .	13,200
Norfolk . . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	1,111
Sharon . . . .	4,000 00	4,000 00	4,000 00	Bituminous macadam . .	3,378
Stoughton . . .	6,000 00	6,000 00	6,000 00	Bituminous macadam . .	2,300
Walpole . . . .	4,000 00	8,358 35	4,000 00	Bituminous concrete . .	5,740
Walpole . . . .	1,200 00	1,200 00	1,200 00	Wood-block paving . . .	80
Wrentham . . .	5,000 00	5,000 00	5,000 00	Gravel . . . . .	4,050
<i>Plymouth County.</i>					
Bridgewater . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam . .	4,800
Carver . . . .	3,000 00	3,000 00	3,000 00	Bituminous concrete . .	3,300
Duxbury . . . .	250 00	250 00	250 00	Repair and oiling . . . .	1,300
East Bridgewater .	3,000 00	4,000 00	2,000 00	Bituminous concrete . .	2,070
East Bridgewater .	3,000 00	3,000 00	3,000 00	Two bridges . . . . .	—
Hanover . . . .	5,000 00	15,350 00	5,000 00	Repair and oiling . . . .	27,212
Hanson . . . .	2,000 00	2,000 00	—	Waterbound macadam . .	2,300
Marshfield . . .	7,000 00	3,000 00	5,000 00	Gravel . . . . .	18,750
Norwell . . . .	5,000 00	5,000 00	5,000 00	Waterbound macadam . .	4,300
Pembroke . . . .	8,000 00	13,000 00	8,000 00	Bituminous concrete . .	8,908
Plympton . . . .	5,000 00	5,000 00	5,000 00	Bituminous concrete . .	2,750
West Bridgewater .	3,000 00	3,000 00	—	Bituminous concrete . .	1,657
<i>Worcester County.</i>					
Barre . . . . .	2,000 00	3,000 00	—	Gravel . . . . .	3,000
Berlin . . . . .	1,500 00	1,500 00	—	Repair and oiling . . . .	36,960
Boylston . . . .	2,000 00	2,000 00	2,000 00	Repair and oiling . . . .	38,016
Dana . . . . .	700 00	700 00	700 00	Gravel . . . . .	2,125
Gardner . . . .	2,500 00	2,500 00	—	Bituminous macadam . .	1,050
Hardwick . . . .	20,000 00	60,000 00	20,000 00	Cement concrete . . . .	16,060
Harvard . . . .	9,000 00	9,000 00	9,000 00	Bituminous macadam . .	4,300
Leicester . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam . .	2,100
Mendon . . . .	500 00	500 00	500 00	Gravel . . . . .	700
Millbury . . . .	24,000 00	41,000 00	20,000 00	Cement concrete . . . .	8,249
Petersham . . . .	500 00	500 00	500 00	Gravel . . . . .	1,200
Shrewsbury . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam . .	2,600
Sterling . . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	1,700
Westminster . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	1,700



The expenditures during the year in various counties were: —

COUNTY.	Amount.
Barnstable . . . . .	\$50,426 13
Berkshire . . . . .	69,095 27
Bristol . . . . .	28,343 08
Dukes . . . . .	7,717 00
Essex . . . . .	89,870 24
Franklin . . . . .	23,669 42
Hampden . . . . .	67,264 72
Hampshire . . . . .	26,672 23
Middlesex . . . . .	139,024 51
Nantucket . . . . .	3,500 00
Norfolk . . . . .	57,110 98
Plymouth . . . . .	117,125 74
Worcester . . . . .	85,484 44

Details of the foregoing expenditures follow: —

*Barnstable County.*

Bourne . . . . .	\$31,683 78
Brewster . . . . .	2,969 82
Dennis . . . . .	2,409 82
Falmouth . . . . .	9,443 22
Mashpee . . . . .	3,898 79
Sandwich . . . . .	20 70

*Berkshire County.*

Alford . . . . .	400 00
Becket . . . . .	300 00
Cheshire . . . . .	928 00
Egremont . . . . .	1,000 00
Hancock . . . . .	2,000 00
Lanesborough . . . . .	14,151 67
New Ashford . . . . .	29,786 84
New Marlborough . . . . .	2,000 00
Otis . . . . .	500 00
Richmond . . . . .	1,500 00
Savoy . . . . .	500 00
Sheffield . . . . .	1,956 13
Tyringham . . . . .	1,000 00
Washington . . . . .	1,000 00
Williamstown . . . . .	12,072 63

*Bristol County.*

Berkley . . . . .	\$1,520 96
Dartmouth . . . . .	2,000 00
Dighton . . . . .	8,000 00
Easton . . . . .	3,000 00
Mansfield . . . . .	7,031 79
Rehoboth . . . . .	3,256 23
Somerset . . . . .	39 68
Swansea . . . . .	1,994 42
Westport . . . . .	1,500 00

*Dukes County.*

Tisbury . . . . .	7,717 00
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*Essex County.*

Andover . . . . .	17,619 54
Danvers . . . . .	11,050 50
Essex . . . . .	1,000 00
Groveland . . . . .	668 13
Ipswich . . . . .	5,727 44
Lynnfield . . . . .	6,672 67
Marblehead . . . . .	10,014 40
Newbury . . . . .	3,173 77
Rowley . . . . .	2,981 86
Salisbury . . . . .	21,111 48
Saugus . . . . .	153 00
Swampscott . . . . .	5,000 00
Topsfield . . . . .	3,197 45
West Newbury . . . . .	1,500 00

*Franklin County.*

Ashfield . . . . .	1,000 00
Bernardston . . . . .	951 79
Buckland . . . . .	1,469 30
Colrain . . . . .	800 00
Montague . . . . .	10,000 00
New Salem . . . . .	5,973 75
Orange . . . . .	1,000 00
Rowe . . . . .	1,794 88
Shelburne . . . . .	279 70
Warwick . . . . .	400 00

*Hampden County.*

Blandford . . . . .	1,000 00
Chester . . . . .	999 76
East Longmeadow . . . . .	5,102 12

Ludlow . . . . .	\$200 00
Southwick . . . . .	494 45
Tolland . . . . .	300 00
West Springfield . . . . .	10,000 00
Westfield . . . . .	47,368 39
Wilbraham . . . . .	1,800 00

*Hampshire County.*

Cummington . . . . .	79 45
Easthampton . . . . .	3,493 20
Hadley . . . . .	17,199 58
Hatfield . . . . .	5,000 00
Prescott . . . . .	400 00
Southampton . . . . .	500 00

*Middlesex County.*

Acton . . . . .	9,685 98
Ashby . . . . .	2,000 00
Ashland . . . . .	10,095 15
Ayer . . . . .	1,702 29
Bedford . . . . .	5,877 60
Billerica . . . . .	33,736 31
Boxborough . . . . .	500 00
Burlington . . . . .	800 00
Carlisle . . . . .	500 00
Chelmsford . . . . .	11,999 40
Dracut . . . . .	3,147 92
Dunstable . . . . .	1,750 00
Framingham . . . . .	8,246 68
Holliston . . . . .	1,350 66
Hopkinton . . . . .	3,000 00
Hudson . . . . .	5,488 73
Lexington . . . . .	2,856 77
Lincoln . . . . .	5,645 24
Littleton . . . . .	2,389 23
Maynard . . . . .	2,958 25
Natick . . . . .	1,833 33
North Reading . . . . .	900 00
Sherborn . . . . .	1,500 00
Stoneham . . . . .	1,700 00
Stow . . . . .	6,767 30
Sudbury . . . . .	2,224 93
Tyngsborough . . . . .	500 00
Wakefield . . . . .	1,902 07
Wayland . . . . .	3,300 00
Westford . . . . .	2,666 67
Wilmington . . . . .	2,000 00



*Nantucket County.*

Nantucket . . . . .	\$3,500 00
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*Norfolk County.*

Bellingham . . . . .	2,997 18
Canton . . . . .	17,811 49
Franklin . . . . .	4,000 00
Holbrook . . . . .	6,230 62
Medfield . . . . .	1,500 00
Medway . . . . .	3,497 42
Millis . . . . .	5,072 18
Norfolk . . . . .	2,593 07
Randolph . . . . .	2,762 35
Sharon . . . . .	5,069 62
Walpole . . . . .	4,000 00
Westwood . . . . .	450 30
Weymouth . . . . .	1,028 00
Wrentham . . . . .	98 75

*Plymouth County.*

Bridgewater . . . . .	5,000 00
Duxbury . . . . .	10,225 00
East Bridgewater . . . . .	3,463 50
Halifax . . . . .	3,600 00
Hanover . . . . .	3,500 00
Hanson . . . . .	2,457 10
Kingston . . . . .	32,330 34
Lakeville . . . . .	1,417 98
Marshfield . . . . .	7,000 00
Norwell . . . . .	4,282 00
Pembroke . . . . .	4,748 10
Plympton . . . . .	3,552 42
Wareham . . . . .	30,290 23
West Bridgewater . . . . .	5,259 07

*Worcester County.*

Ashburnham . . . . .	1,027 18
Berlin . . . . .	1,496 79
Dudley . . . . .	18,227 20
Gardner . . . . .	2,500 00
Harvard . . . . .	741 35
Holden . . . . .	519 24
Leicester . . . . .	6,890 00
Millbury . . . . .	18,883 32
North Brookfield . . . . .	2,268 29

Oxford . . . . .	\$3,100 00
Petersham . . . . .	2,177 73
Princeton . . . . .	13,615 23
Shrewsbury . . . . .	1,996 19
Sterling . . . . .	2,023 88
Templeton . . . . .	2,804 20
Westborough . . . . .	7,213 84
<hr/>	
Total . . . . .	\$765,303 76

HIGHWAYS IN THE FIVE WESTERN COUNTIES.

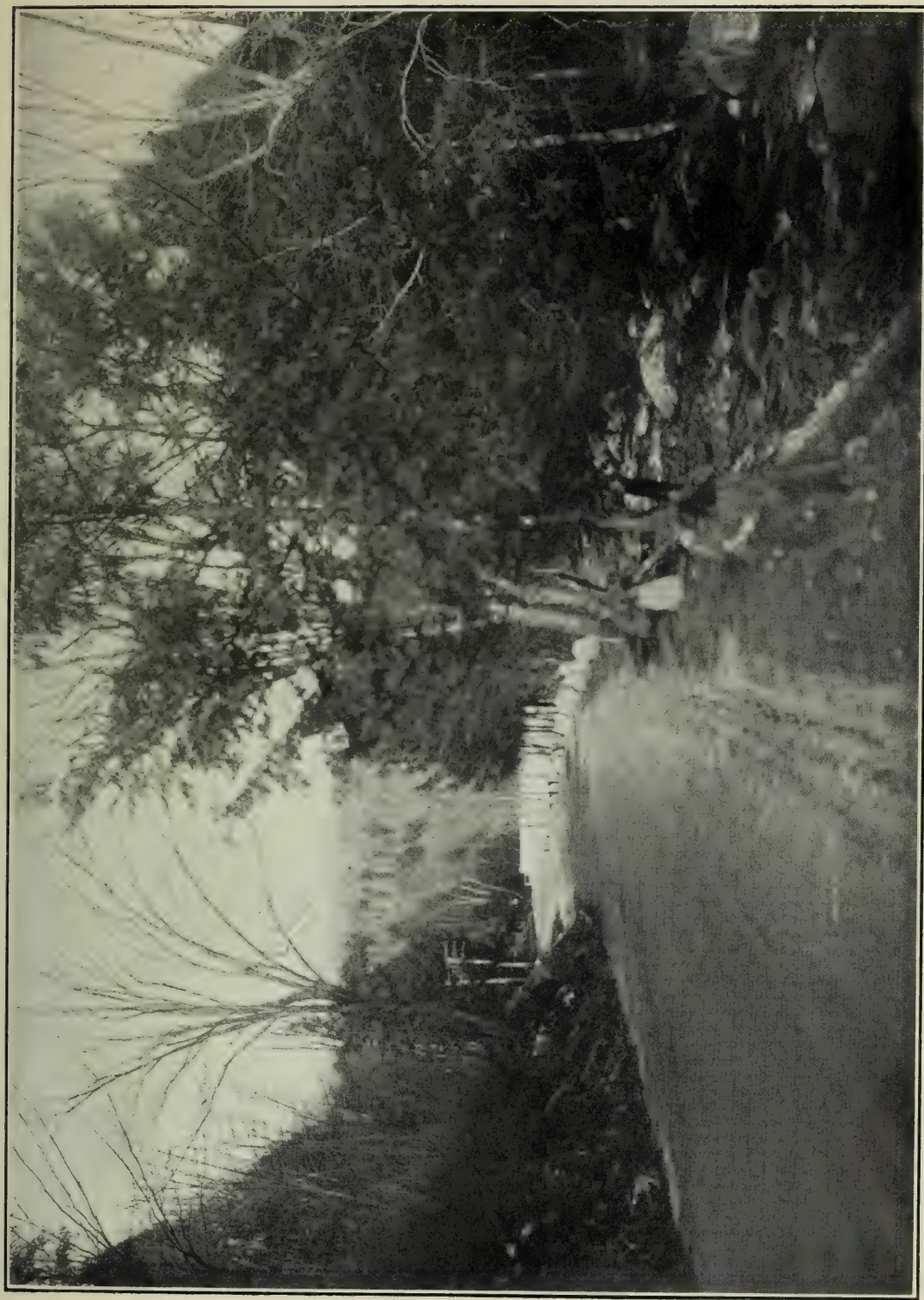
(Chapter 221, General Acts of 1915.)

Chapter 572, Acts of 1920, in addition to authorizing the Division to expend an additional sum of \$1,000,000 before Nov. 30, 1924, for the purpose of completing the construction of certain highways in the five western counties of the State, under the provisions of chapter 221 of the General Acts of 1915, provides that one-fourth of any money which may be expended under the provisions of section 1 thereof for a highway in any county shall be repaid by the county to the Commonwealth in such instalments and at such times, within six years thereafter, as the Division, with the approval of the Auditor of the Commonwealth, shall determine; also that a sum equal to the money so repaid shall before Nov. 30, 1926, be expended by the Division without specific appropriation, either in completing the highways mentioned in said chapter 221, or in improving a highway in any town in the five western counties that is not situated upon one of the highways mentioned in said act, provided that the valuation of the town does not exceed \$1,000,000, the highway so improved to be a main highway connecting such town with its railroad station, with a main through highway, or with an adjoining city or town.

The total expenditures during the year for the construction of highways in Cummington, Dalton, Windsor and Goshen; Otis and Sandisfield; Washington and Hinsdale; Worthington, Cummington and Huntington; Peru; Cummington and Plainfield; Belchertown; Southwick; Ashfield and Deerfield; Gill and Bernardston; Barre and Oakham; Warwick and Chesterfield were \$381,090.53, details of which follow: —

<i>Route No. 2.</i>	
Cummington . . . . .	\$223 96
Dalton . . . . .	3,705 23
Windsor . . . . .	58,048 46
Goshen . . . . .	2,644 39





Scenic highway in Becket.



*Route No. 3.*

Otis . . . . .	\$180 38
Sandisfield . . . . .	42 50

*Route No. 4.*

Washington . . . . .	80,073 32
Hinsdale . . . . .	248 64

*Route No. 5.*

Worthington . . . . .	24,170 97
Cummington . . . . .	114 80
Huntington . . . . .	75,581 77

*Route No. 6.*

Peru . . . . .	10,453 19
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*Route No. 7.*

Cummington . . . . .	275 29
Plainfield . . . . .	404 50

*Route No. 8.*

Belchertown . . . . .	11,746 41
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*Route No. 9.*

Southwick . . . . .	13,945 61
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*Route No. 10.*

Ashfield . . . . .	928 86
Deerfield . . . . .	48 00

*Route No. 11.*

Gill . . . . .	13,235 90
Bernardston . . . . .	46 48

*Route No. 12.*

Barre . . . . .	61,775 78
Oakham . . . . .	6,109 69

*Route No. 14.*

Warwick . . . . .	4,989 12
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*Route No. 17.*

Chesterfield . . . . .	12,097 28
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Total . . . . .	\$381,090 53
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## CONSTRUCTION AND REPAIR OF WAYS NOT STATE HIGHWAYS IN CERTAIN TOWNS.

Section 23 of chapter 81 of the General Laws provides that —

The division shall allot for towns having a valuation not exceeding one million dollars, in such amounts as it determines, five per cent of the amount appropriated each year for the construction of state highways, and shall expend the same in constructing and repairing ways therein, whether or not such towns shall have made any appropriation or contribution in excess of the usual annual appropriations for highway purposes. The division may also allot for and expend in such towns for like purposes, in addition to any expenditure hereinbefore provided for, a further amount of five per cent of said amount appropriated, if such towns appropriate or contribute an amount to be expended under this section equal to that allotted by the division. The division may likewise allot and expend, in towns the valuation of which exceeds one million dollars, not more than five per cent of the amount appropriated each year for the construction of state highways, if such towns appropriate or contribute, to be expended under this section, in addition to the average annual appropriations for repairs of highways in such towns for the preceding five years, exclusive of appropriations or contributions under this section, an amount equal to the amount allotted by the division. No town the valuation of which is less than one million dollars, and which makes no appropriation or contribution under this section, shall receive in any one year more than forty per cent of its average annual appropriations for highway purposes for the preceding five years; provided, that the division may allot in any year a sum not exceeding four hundred dollars to any such town the average annual appropriation of which for highway purposes for the preceding five years does not exceed one thousand dollars. Such allotments and expenditures shall be made only upon petition of the selectmen, and section nine shall apply thereto, but a way constructed or repaired under this section shall not thereby become a state highway.

The total expenditures during the year in various towns in Barnstable, Berkshire, Essex, Franklin, Hampden, Hampshire, Nantucket and Worcester counties, under section 23 of chapter 81 of the General Laws, under contracts made previous to 1921, were \$74,533.24. Details of the foregoing expenditures follow: —

*Barnstable County.*

Falmouth . . . . .	\$500 00
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*Berkshire County.*

Hinsdale . . . . .	896 24
Mount Washington . . . . .	200 00
New Marlborough . . . . .	430 00
Tyringham . . . . .	100 00
Williamstown . . . . .	12,946 81

*Essex County.*

Rockport . . . . .	3,000 00
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*Franklin County.*

Colrain . . . . .	1,599 98
Warwick . . . . .	400 00
Wendell . . . . .	199 93

*Hampden County.*

Agawam . . . . .	9,433 94
Blandford . . . . .	1,250 00
Chester . . . . .	989 96
Ludlow . . . . .	750 00
Monson . . . . .	2,500 00
Palmer . . . . .	28,308 99
Southwick . . . . .	498 75
Wilbraham . . . . .	4,517 00

*Hampshire County.*

Enfield . . . . .	600 00
Granby . . . . .	999 96
Middlefield . . . . .	161 68

*Nantucket County.*

Nantucket . . . . .	1,750 00
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*Worcester County.*

Gardner . . . . .	2,500 00
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Total . . . . .	\$74,533 24
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MAINTENANCE AND IMPROVEMENT OF PUBLIC WAYS.

(Chapter 155, General Acts of 1918.)

The expenditures during 1921 in various counties, for the maintenance and improvement of public ways, exclusive of State highways in certain towns, under chapter 155, General Acts of 1918, were:—

COUNTIES.	Amount.
Berkshire . . . . .	\$2,966 15
Bristol . . . . .	4,678 41
Franklin . . . . .	1,316 89
Hampden . . . . .	2,421 35
Hampshire . . . . .	5,255 24
Middlesex . . . . .	525 00
Worcester . . . . .	3,155 23

Details of the foregoing expenditures follow:—

*Berkshire County.*

Alford . . . . .	\$204 48
Becket . . . . .	900 00
Hinsdale . . . . .	50 00
Monterey . . . . .	1,075 00
New Marlborough . . . . .	350 00
Sandisfield . . . . .	161 67
Savoy . . . . .	25 00
Washington . . . . .	200 00

*Bristol County.*

Raynham . . . . .	1,678 41
Rehoboth . . . . .	3,000 00

*Franklin County.*

Conway . . . . .	32 40
Gill . . . . .	24 53
Heath . . . . .	85 43
Leverett . . . . .	225 00
Leyden . . . . .	24 53
New Salem . . . . .	175 00
Northfield . . . . .	100 00
Rowe . . . . .	25 00



Shutesbury . . . . .	\$75 00
Sunderland . . . . .	450 00
Warwick . . . . .	100 00

*Hampden County.*

Blandford . . . . .	266 78
Brimfield . . . . .	400 00
Chester . . . . .	479 50
Hampden . . . . .	23 06
Holland . . . . .	75 00
Monson . . . . .	50 00
Southwick . . . . .	227 01
Tolland . . . . .	900 00

*Hampshire County.*

Belchertown . . . . .	250 00
Chesterfield . . . . .	225 00
Cummington . . . . .	800 00
Enfield . . . . .	23 73
Goshen . . . . .	150 00
Granby . . . . .	387 50
Greenwich . . . . .	25 00
Huntington . . . . .	275 00
Middlefield . . . . .	725 00
Pelham . . . . .	176 71
Westhampton . . . . .	1,600 00
Williamsburg . . . . .	221 66
Worthington . . . . .	395 64

*Middlesex County.*

Ashby . . . . .	225 00
Townsend . . . . .	300 00

*Worcester County.*

Ashburnham . . . . .	200 00
Charlton . . . . .	267 10
Hubbardston . . . . .	75 00
New Braintree . . . . .	1,225 00
Oakham . . . . .	154 44
Paxton . . . . .	69 88
Phillipston . . . . .	72 27
Princeton . . . . .	516 69
Royalston . . . . .	74 98
Rutland . . . . .	250 00
Templeton . . . . .	49 87
Westminster . . . . .	200 00

Total . . . . .	\$20,318 27
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## REPAIR AND IMPROVEMENT OF PUBLIC WAYS, EXCLUSIVE OF STATE HIGHWAYS, IN CERTAIN TOWNS.

(Sections 26-29 and 31 of chapter 81 of the General Laws, as amended, with reference to section 26, by section 1 of chapter 120 of the Acts of 1921.)

SECTION 26. There may be expended for the repair and improvement of public ways, other than state highways, in towns the valuation of which is less than three million dollars and in which the amount of such valuation, divided by the number of miles of such public ways, hereinafter referred to as the road mileage valuation, is less than fifty thousand dollars, such sums, not exceeding fifty dollars per mile, as the general court may appropriate therefor; provided, that such towns shall contribute or make available for use in connection therewith the following amounts for each mile of said public ways within their respective limits, according to the following schedule based on their road mileage valuation.

1. Less than five thousand dollars, twelve dollars and fifty cents.
2. Five thousand dollars and less than seven thousand five hundred dollars, fifteen dollars.
3. Seven thousand five hundred dollars and less than ten thousand dollars, twenty-five dollars.
4. Ten thousand dollars and less than fifteen thousand dollars, forty dollars.
5. Fifteen thousand dollars and less than twenty thousand dollars, fifty dollars.
6. Twenty thousand dollars and less than thirty thousand dollars, seventy-five dollars.
7. Thirty thousand dollars and less than forty thousand dollars, one hundred dollars.
8. Forty thousand dollars and less than fifty thousand dollars, one hundred and twenty-five dollars.

The amounts appropriated as aforesaid and contributed by the towns shall be expended under the direction of the division on such ways as the division and the selectmen of the towns may agree upon.

Chapter 81 of the General Laws was amended by section 1 of chapter 120 of the Acts of 1921 by adding a new section, as follows: —

SECTION 26A. The county commissioners of the county wherein any public way is to be repaired or improved under the provisions of the preceding section may contribute and expend county funds therefor in accordance with such agreements as the commissioners may make with the division and the selectmen of the town. Said county funds may be

paid to the division or to the town from time to time as the work progresses, to the extent that the said commissioners are satisfied that the work for which agreements have been made is being done in accordance therewith. Such contributions or expenditures by a county shall not render it liable for defects in any way or for damages to persons traveling thereon, and when the work of repair or maintenance for which such contribution or expenditure is made is completed, there shall be no further obligation on the part of the county as to the repair and maintenance thereof until a further contribution is made by the county commissioners for such purpose.

Other sections of chapter 81 are: —

SECTION 27. The said expenditures shall be made only upon the written petition of the selectmen, containing such information as the division may require. No work shall be done under the preceding section in any district where dwelling houses or structures devoted to business are situated at intervals averaging less than two hundred feet for the distance of a quarter of a mile.

SECTION 28. The said towns may contract with the division for the performance of the work authorized by section twenty-six; or, if the selectmen so request, the division may have the work done by such persons and in such manner as it may determine, in which event the towns shall pay their proportionate part of the expense when and as ordered by the division. The cost of any materials, machinery or tools purchased by the division for or on account of the work in any town shall be considered as a part of the expenditures in such town under section twenty-six; and such machinery or tools shall belong to the commonwealth.

SECTION 29. The division shall determine, as nearly as possible, the number of miles of such public ways in towns the valuation of which is less than three million dollars, and shall inform the selectmen of such towns of the contributions required under section twenty-six.

SECTION 31. The valuation of a town for the purposes of this chapter shall be the last preceding valuation made for the purpose of apportioning the state tax.

During the year the Division has contracted for work to be done in the towns named in the following table, which also shows the allotments or contributions by the State and towns: —



COUNTIES AND TOWNS.	ALLOTMENTS.	
	State.	Town.
<b>Barnstable County:</b>		
Eastham . . . . .	\$1,950 00	\$1,950 00
Truro . . . . .	3,000 00	2,200 00
Wellfleet . . . . .	1,750 00	4,500 00
<b>Berkshire County:</b>		
Alford . . . . .	1,000 00	800 00
Becket . . . . .	2,900 00	3,000 00
Florida . . . . .	2,050 00	5,000 00
Hancock . . . . .	1,450 00	1,500 00
Hinsdale . . . . .	1,850 00	2,775 00
Lanesborough . . . . .	2,500 00	3,500 00
Monterey . . . . .	2,500 00	1,250 00
New Marlborough . . . . .	3,000 00	4,000 00
Otis . . . . .	2,950 00	1,000 00
Peru . . . . .	2,250 00	900 00
Sandisfield . . . . .	3,000 00	3,000 00
Savoy . . . . .	2,800 00	1,000 00
Sheffield . . . . .	3,000 00	4,500 00
Tyringham . . . . .	1,150 00	1,150 00
West Stockbridge . . . . .	1,800 00	2,900 00
Windsor . . . . .	3,000 00	825 00
<b>Bristol County:</b>		
Freetown . . . . .	3,000 00	5,000 00
Norton . . . . .	1,200 00	2,400 00
Raynham . . . . .	2,200 00	5,000 00
Rehoboth . . . . .	3,000 00	4,040 00
<b>Essex County:</b>		
West Newbury . . . . .	1,950 00	3,000 00
<b>Franklin County:</b>		
Ashfield . . . . .	3,000 00	3,280 00
Bernardston . . . . .	2,550 00	2,040 00
Charlemont . . . . .	2,500 00	2,000 00
Colrain . . . . .	3,000 00	3,600 00
Conway . . . . .	3,000 00	2,960 00
Gill . . . . .	1,800 00	1,800 00
Hawley . . . . .	2,450 00	1,200 00
Heath . . . . .	2,700 00	1,400 00
Leverett . . . . .	1,950 00	2,000 00
Leyden . . . . .	2,050 00	1,000 00
New Salem . . . . .	3,000 00	1,500 00
Northfield . . . . .	3,000 00	5,325 00
Shutesbury . . . . .	2,000 00	1,000 00
Sunderland . . . . .	1,700 00	2,550 00
Warwick . . . . .	2,800 00	1,500 00
Wendell . . . . .	2,350 00	2,500 00
Whately . . . . .	1,950 00	3,000 00
<b>Hampden County:</b>		
Blandford . . . . .	3,000 00	3,440 00
Brimfield . . . . .	3,000 00	3,060 00
Chester . . . . .	3,000 00	3,550 00
Granville . . . . .	3,000 00	3,300 00
Hampden . . . . .	1,700 00	1,360 00
Holland . . . . .	1,600 00	450 00
Monson . . . . .	3,000 00	6,300 00
Montgomery . . . . .	1,600 00	800 00
Southwick . . . . .	3,000 00	7,000 00
Tolland . . . . .	2,000 00	2,050 00
Wales . . . . .	1,400 00	1,120 00
<b>Hampshire County:</b>		
Belchertown . . . . .	3,000 00	6,940 00
Chesterfield . . . . .	2,600 00	1,300 00
Cummington . . . . .	2,450 00	2,000 00
Enfield . . . . .	1,850 00	3,000 00
Goshen . . . . .	1,550 00	800 00
Granby . . . . .	2,300 00	2,500 00
Greenwich . . . . .	1,950 00	1,000 00
Huntington . . . . .	2,050 00	3,200 00
Middlefield . . . . .	1,950 00	1,500 00
Pelham . . . . .	2,000 00	1,750 00
Plainfield . . . . .	2,400 00	1,000 00

COUNTIES AND TOWNS.	ALLOTMENTS.	
	State.	Town.
<b>Hampshire County — <i>Concluded.</i></b>		
Prescott . . . . .	\$1,950 00	\$800 00
Southampton . . . . .	3,000 00	2,500 00
Westhampton . . . . .	2,450 00	800 00
Williamsburg . . . . .	2,100 00	4,200 00
Worthington . . . . .	3,000 00	900 00
<b>Middlesex County:</b>		
Ashby . . . . .	2,850 00	2,850 00
Boxborough . . . . .	1,200 00	1,050 00
Carlisle . . . . .	3,000 00	1,500 00
Dunstable . . . . .	1,750 00	1,400 00
Holliston . . . . .	1,300 00	3,300 00
Hopkinton . . . . .	3,000 00	5,175 00
Sherborn . . . . .	2,500 00	13,000 00
Stow . . . . .	2,250 00	3,375 00
Townsend . . . . .	3,000 00	4,700 00
Tyngsborough . . . . .	1,700 00	2,550 00
Wilmington . . . . .	2,450 00	6,125 00
<b>Norfolk County:</b>		
Bellingham . . . . .	2,050 00	4,100 00
Medway . . . . .	2,000 00	8,000 00
<b>Plymouth County:</b>		
Halifax . . . . .	1,600 00	2,400 00
Lakeville . . . . .	2,850 00	5,000 00
Plympton . . . . .	1,700 00	1,700 00
Rochester . . . . .	3,000 00	5,160 00
<b>Worcester County:</b>		
Ashburnham . . . . .	3,000 00	4,760 00
Berlin . . . . .	1,850 00	2,775 00
Bolton . . . . .	2,750 00	2,200 00
Boylston . . . . .	1,600 00	1,600 00
Brookfield . . . . .	2,250 00	4,000 00
Charlton . . . . .	3,000 00	4,800 00
Dana . . . . .	2,500 00	1,250 00
Douglas . . . . .	3,000 00	3,000 00
Harvard . . . . .	3,000 00	6,360 00
Holden . . . . .	3,000 00	7,500 00
Hubbardston . . . . .	3,000 00	3,500 00
Lunenburg . . . . .	3,000 00	5,550 00
Mendon . . . . .	2,150 00	2,150 00
New Braintree . . . . .	2,450 00	2,586 00
Oakham . . . . .	2,350 00	1,425 00
Paxton . . . . .	1,450 00	1,320 00
Petersham . . . . .	3,000 00	4,650 00
Phillipston . . . . .	2,050 00	1,800 00
Princeton . . . . .	3,000 00	4,000 00
Royalston . . . . .	3,000 00	4,100 00
Rutland . . . . .	3,000 00	3,540 00
Sterling . . . . .	3,000 00	5,000 00
Sturbridge . . . . .	3,000 00	3,600 00
Sutton . . . . .	3,000 00	4,500 00
Templeton . . . . .	3,000 00	6,900 00
Upton . . . . .	3,000 00	4,650 00
Westminster . . . . .	3,000 00	3,440 00

The expenditures during 1921, in various counties, for the repair and improvement of public ways, exclusive of State highways, in certain towns, were:—

COUNTY.	Amount.
Barnstable . . . . .	\$2,274 75
Berkshire . . . . .	33,355 50
Bristol . . . . .	7,200 00
Essex . . . . .	1,500 00
Franklin . . . . .	36,616 46
Hampden . . . . .	22,005 29
Hampshire . . . . .	33,669 11
Middlesex . . . . .	23,132 48
Norfolk . . . . .	4,050 00
Plymouth . . . . .	7,660 87
Worcester . . . . .	61,017 08

Details of the foregoing expenditures follow:—

*Barnstable County.*

Truro . . . . .	\$1,434 75
Wellfleet . . . . .	840 00

*Berkshire County.*

Alford . . . . .	1,000 00
Becket . . . . .	2,900 00
Florida . . . . .	2,050 00
Hancock . . . . .	1,310 86
Hinsdale . . . . .	1,400 67
Lanesborough . . . . .	1,819 81
Monterey . . . . .	2,251 14
New Marlborough . . . . .	2,769 07
Otis . . . . .	2,950 00
Peru . . . . .	2,215 56
Sandisfield . . . . .	3,000 00
Savoy . . . . .	2,759 95
Sheffield . . . . .	1,270 87
Tyringham . . . . .	1,065 37
West Stockbridge . . . . .	1,714 53
Windsor . . . . .	2,877 67

*Bristol County.*

Freetown . . . . .	3,000 00
Raynham . . . . .	1,200 00
Rehoboth . . . . .	3,000 00



*Essex County.*

West Newbury . . . . .	\$1,500 00
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*Franklin County.*

Ashfield . . . . .	57 20
Bernardston . . . . .	2,500 00
Charlemont . . . . .	2,500 00
Colrain . . . . .	2,998 50
Conway . . . . .	2,478 16
Gill . . . . .	1,800 00
Hawley . . . . .	2,425 00
Heath . . . . .	2,700 00
Leverett . . . . .	1,725 00
Leyden . . . . .	2,050 00
New Salem . . . . .	2,900 00
Northfield . . . . .	2,382 60
Shutesbury . . . . .	1,900 00
Sunderland . . . . .	1,525 00
Warwick . . . . .	2,775 00
Wendell . . . . .	2,275 00
Whately . . . . .	1,625 00

*Hampden County.*

Blandford . . . . .	2,246 45
Brimfield . . . . .	2,700 03
Chester . . . . .	2,309 16
Granville . . . . .	2,501 48
Hampden . . . . .	1,484 99
Holland . . . . .	1,430 82
Monson . . . . .	3,000 00
Montgomery . . . . .	1,599 82
Southwick . . . . .	1,756 01
Tolland . . . . .	1,652 32
Wales . . . . .	1,324 21

*Hampshire County.*

Belchertown . . . . .	1,711 40
Chesterfield . . . . .	2,577 82
Cummington . . . . .	2,450 00
Enfield . . . . .	1,675 27
Goshen . . . . .	1,500 00
Granby . . . . .	2,200 00
Greenwich . . . . .	1,950 00
Huntington . . . . .	1,471 80
Middlefield . . . . .	1,703 38
Pelham . . . . .	2,000 00

Plainfield . . . . .	\$2,400 00
Prescott . . . . .	1,950 00
Southampton . . . . .	2,950 00
Westhampton . . . . .	2,425 00
Williamsburg . . . . .	1,779 44
Worthington . . . . .	2,925 00

*Middlesex County.*

Ashby . . . . .	2,850 00
Boxborough . . . . .	1,216 60
Carlisle . . . . .	2,983 56
Dunstable . . . . .	1,156 00
Holliston . . . . .	965 00
Hopkinton . . . . .	2,847 34
Sherborn . . . . .	2,383 94
Stow . . . . .	2,065 76
Townsend . . . . .	2,557 00
Tyngsborough . . . . .	1,700 00
Wilmington . . . . .	2,407 28

*Norfolk County.*

Bellingham . . . . .	2,050 00
Medway . . . . .	2,000 00

*Plymouth County.*

Halifax . . . . .	1,600 00
Lakeville . . . . .	1,815 00
Plympton . . . . .	1,672 67
Rochester . . . . .	2,573 20

*Worcester County.*

Ashburnham . . . . .	2,665 11
Berlin . . . . .	1,121 99
Bolton . . . . .	1,976 52
Boylston . . . . .	878 77
Brookfield . . . . .	1,567 18
Charlton . . . . .	2,999 36
Dana . . . . .	2,061 69
Douglas . . . . .	3,000 00
Harvard . . . . .	3,000 00
Holden . . . . .	2,435 70
Hubbardston . . . . .	2,504 73
Lunenburg . . . . .	2,218 86
Mendon . . . . .	2,073 29
New Braintree . . . . .	2,182 20
Oakham . . . . .	2,047 74

Paxton . . . . .	\$1,177 53
Petersham . . . . .	2,520 06
Phillipston . . . . .	1,715 18
Princeton . . . . .	2,225 41
Royalston . . . . .	2,484 26
Rutland . . . . .	3,000 00
Sterling . . . . .	2,566 25
Sturbridge . . . . .	2,755 32
Sutton . . . . .	2,099 62
Templeton . . . . .	2,649 50
Upton . . . . .	2,448 84
Westminster . . . . .	2,641 97
<hr/>	
Total . . . . .	\$232,481 54
Engineering charges . . . . .	129,042 41
<hr/>	
Total . . . . .	\$361,523 95



STATE AID IN KEEPING CERTAIN HIGHWAYS OPEN DURING THE WINTER MONTHS.

Chapter 84 of the General Laws, section 11, provides: —

The department of public works may, by furnishing such equipment as it deems desirable and supervising the use of the same, co-operate with the proper officers of cities and towns in keeping open and reasonably passable for vehicles during the winter months such highways as may be selected by said department, with the approval of the proper officers of the city or town in which any such highway is located, having regard to the importance thereof for commercial uses and the co-operation and aid to be rendered by cities, towns and persons in carrying on this work, and for this purpose may accept financial or other assistance from any person; provided, however, that work carried on under this section shall be supplemental to work undertaken and performed by cities and towns under other provisions of law, and that nothing in this section shall render the commonwealth liable for damages for which it is not liable under other provisions of law or relieve cities and towns from keeping their highways clear from ice and snow as required by other provisions of law.

Up to Dec. 1, 1921, snow fences were erected during the winter months along the Boston-Springfield, Boston-Lawrence, Springfield-Greenfield, Greenfield-Pittsfield, Pittsfield-North Adams, and Pittsfield-Springfield lines of highway, the total length of fences being approximately 12,600 feet. The Department also furnished certain equipment in accordance with the provisions of section 11 aforesaid.

The expenditure during the year ending Nov. 30, 1921, was \$47,333.83.

## THE REGULATION OF ADVERTISING SIGNS AND DEVICES WITHIN THE PUBLIC VIEW.

By the provisions of chapter 545 of the Acts of 1920, approved May 27, 1920, the Division of Highways of the Department of Public Works was directed, within sixty days after the passage of the act, to make rules and regulations for the proper control and restriction of billboard and other advertising devices on public ways or on private property within public view of any highway, public park or reservation, and authorized, from time to time, to amend, repeal or add to said rules and regulations.

Rules and regulations were adopted by the Division, to be in force on and after Dec. 31, 1920, and they were printed in the annual report of the Department of Public Works for the year ending Nov. 30, 1920.

Chapter 545 aforesaid is now consolidated in the General Laws, chapter 93, sections 29 to 33, inclusive, as follows: —

SECTION 29. The division of highways of the department of public works, hereinafter called the division, shall make and may amend or repeal rules and regulations for the proper control and restriction of billboards, signs and other advertising devices, except as provided in section thirty-two, on public ways or on private property within public view of any highway, public park or reservation. Said rules and regulations may require that said billboards, signs or other devices be licensed in accordance therewith and with this section, may prescribe license fees, to be fixed with regard to the cost of administering this section, and need not be uniform throughout the commonwealth. Before establishing or amending rules or regulations under this section, the division shall hold duly advertised public hearings in Boston and elsewhere within the commonwealth as it deems necessary or expedient. Subject to the approval of the division, towns may further regulate and restrict said billboards or other devices within their respective limits by ordinance or by-law not inconsistent with sections twenty-nine to thirty-three, inclusive, or with said rules and regulations.

SECTION 30. No person, firm, association or corporation shall post, erect, display or maintain on any public way or on private property within public view from any highway, public park or reservation any billboard or other advertising device, whether erected before August twenty-fifth, nineteen hundred and twenty, or not, which advertises or



calls attention to any business, article, substance or any other thing, unless such billboard or device conforms to the rules and regulations and ordinances or by-laws established under the preceding section; provided, that this section shall not apply to signs or other devices existing on said date and erected and maintained in conformity with then existing law and which advertise or indicate either the person occupying the premises in question or the business transacted thereon, or advertise the property itself or any part thereof as for sale or to let.

SECTION 31. The supreme judicial and superior courts shall have jurisdiction in equity upon petition of the attorney general, of any town or any officer thereof, or of any interested party, to restrain the erection or maintenance of any billboard, sign or other device erected or maintained in violation of any rule, regulation, ordinance or by-law established or adopted under section twenty-nine, and to order the removal or abatement of such billboard, sign or device as a nuisance.

SECTION 32. Sections twenty-nine to thirty-one, inclusive, and thirty-three shall not apply to signs or other devices on or in the rolling stock, stations, subways or structures of or used by common carriers.

SECTION 33. Whoever violates any rule, regulation, ordinance or by-law established or adopted under section twenty-nine shall be punished by a fine of not more than one hundred dollars, and whoever after conviction of such violation unlawfully maintains such a billboard, sign or other device for twenty days thereafter shall be punished by a fine of not more than five hundred dollars.

Work was inaugurated in the spring of 1921, with one inspector and one assistant inspector, who were charged with the duty of examining locations described in applications made to the Division for licenses or permits under the provisions of the General Laws aforesaid. On June 29, 1921, the Division held a public hearing for the purpose of obtaining the views of various parties and formulating a revision of the rules and regulations in effect on and after Dec. 31, 1920.

Revised rules and regulations were adopted June 29, 1921, to be in force on and after July 1, 1921, as follows:—

#### SECTION 1. DEFINITIONS.

Terms used in the following rules and regulations shall be construed as follows:—

“Division” shall mean Division of Highways, Department of Public Works.

“Licenses” shall mean the right to carry on the business of outdoor advertising by means of billboards, signs, and other advertising devices.

“Permit” shall mean the right to locate and maintain a particular sign.



“Person” shall mean any individual, firm, association, partnership, or corporation, who erects or causes to be erected outdoor advertising signs, or is engaged in carrying on the business of outdoor advertising.

“Sign” shall mean any form of outdoor advertising for which a permit may be petitioned, or for which a permit may be granted under the provisions of these regulations.

“Outdoor advertising” shall mean advertising, the control of which, under the provisions of section 29 of chapter 93 of the General Laws, is vested in the Division of Highways, Department of Public Works.

## SECTION 2. LICENSES.

A. No person shall engage in the business of advertising in this Commonwealth by means of outdoor advertising signs without first having obtained a license from the Division of Highways, Department of Public Works.

B. Applications for licenses may be made to the Division upon blanks prepared under its authority.

C. Applications shall contain such information as the Division may require, and must be accompanied by the proper fee.

D. The fee shall be \$50, and the license shall be in force for one year unless earlier suspended or revoked.

E. Applications for renewal of licenses may be made not later than thirty days prior to the date of expiration, and must be accompanied by the annual fee of \$50.

F. The Division reserves the right to suspend or revoke for cause any license issued by it under the provisions of this section.

## SECTION 3. PERMITS TO PERSONS ENGAGED IN CARRYING ON THE BUSINESS OF OUTDOOR ADVERTISING.

A. No person, firm, association, partnership or corporation engaged in carrying on the business of outdoor advertising shall post, erect, display or maintain within public view from any highway, public park or reservation any billboard, sign or other advertising device, except as hereinafter provided.

B. No sign shall be located until an application for a permit has been filed with the Division and the permit granted.

C. Applications shall be on forms prepared under the direction of, and furnished by, the Division, and shall contain such information as the Division may require.

D. Upon receipt of an application for the location of a sign in any city or town, notice shall be forwarded to the officials in charge of licenses in the city or town where said sign is to be located, setting forth that such application has been received, and that unless disapproved on the part of said officials within twenty days of date of application, action will forthwith be taken upon the same by the Division. If objection to the location of such sign as set forth in said application is registered by officials

of the city or town, a hearing shall be given by the Division of Highways or its representative before action is taken upon said application by the Division.

E. Each sign shall carry the serial number of the permit authorizing its location, in figures of a size approved by the Division.

F. Each application for the annual permit shall be accompanied by a fee of \$1, to be known as the examination fee; and upon issuance of a permit an additional fee of \$1, to be designated as an inspection fee, shall be paid by the licensee.

G. Permits shall be valid and in force, unless they are revoked by the Division, upon payment of the annual fees, which shall be due on the first day of July of each year. Failure to pay such fees within thirty days of the first day of July will be deemed sufficient reason for forthwith cancelling such permits.

H. The Division reserves the right to annul and revoke for cause any permit issued by it under the provisions of this section.

#### SECTION 4. PERMITS TO PERSONS NOT ENGAGED IN CARRYING ON THE BUSINESS OF OUTDOOR ADVERTISING.

A. No person, not engaged in carrying on the business of outdoor advertising, shall post, erect, display or maintain within public view from any highway, public park or reservation any billboard, sign or advertising device, except as hereinafter provided.

B. No sign shall be located until an application for a permit has been filed with the Division and the permit granted.

C. Application for a permit shall be on forms prepared under the direction of and furnished by the Division, and shall contain such information as the Division may require.

D. Permits granted under this section will allow the posting, erecting, displaying or maintaining of advertising devices for one year, or for such period less than one year as the Division in its discretion may authorize. A minimum fee of \$1 will be charged for permits issued under this section, with an additional charge to be determined by the length of time that the advertising is to be displayed and the number of signs to be used.

E. All signs displayed under the provisions of this section shall be removed by the persons to whom the permit is issued not later than two weeks after the expiration of the permit.

F. The Division reserves the right to cancel or revoke for cause any permit issued by it under the provisions of this section.

#### SECTION 5. LOCATIONS.

A. No outdoor advertising shall be permitted within the bounds of any highway.

B. No permits shall be issued for outdoor advertising on any location within 300 feet of any park, parkway, playground, or reservation, except



under the following conditions: Permits may be issued for the maintenance of billboards now located, for such length of time as the Division may specifically determine; permits may be issued for the location of electrical display signs on buildings, under such restrictions as the Division may require.

C. No outdoor advertising shall be permitted upon any rock or tree, nor upon any fence or pole bordering on any public highway.

D. The location of all signs shall be clearly stated in permits as issued.

#### SECTION 6. CHARACTER AND MAINTENANCE.

A. Signs shall be of such size, shape and material as the Division shall approve, and shall be so erected and maintained as to conform to the provisions of the laws of the Commonwealth relating to fire hazard.

B. It shall be the duty of the licensee maintaining a sign under a permit from the Division to keep it and the ground about the same, free from all rubbish, or any material which the Division may consider disadvantageous to the community.

C. The Division reserves the right to pass on all matter displayed on any sign maintained under a permit from the Division, and may require the licensee to remove any objectionable matter.

D. If the licensee fails to meet the requirements of this section, such failure shall be deemed sufficient cause for the revocation of the permit under which said sign was erected and maintained.

#### SECTION 7. RESTRICTIONS.

No permits shall be granted for the location or maintenance of signs near certain highways in territory which, in the opinion of the Division, is of unusual scenic beauty. Such places will be designated by the Division from time to time.

#### SECTION 8. REMOVALS.

All signs now located within the Commonwealth, and in any way affected by these rules and regulations, must be removed on or before July 1, 1921, unless permits for the location or maintenance thereof shall have previously been granted; provided, however, that signs for the maintenance of which applications shall have been made but not acted upon by the Division on that date may be permitted to remain until such time as action thereon is taken by the Division, and in case of the Division's refusal to issue a permit, for a further period of ninety days from the date on which notice of such refusal has been mailed to the applicant.

#### SECTION 9.

These rules and regulations are in substitution of all previous rules and regulations adopted, and shall take effect July 1, 1921.



During the year individuals and firms to the number of 47 have made applications for licenses to carry on the business of outdoor advertising within the State. To Dec. 1, 1921, applications to the number of 9,565 were filed for the maintenance of outdoor advertising signs. Examinations of the locations of approximately 5,500 of these applications have been made, the majority being west of a line drawn across the State from Fitchburg through Worcester to the Rhode Island line. Permits to the number of 846 have been granted for the maintenance of advertising signs; also 10 permits for the placing of small cardboard signs outside highway locations, in connection with agricultural fairs, and which were to be removed upon the expiration of the permits.

Applications for permits to the number of 54 have been disapproved, 51 of which were to be maintained at or near the certain roads which the Division designated scenic highways. The highways so designated include the following:—

Mohawk Trail route, beginning at a point on the 1919 section of the State highway in Greenfield, at its intersection with the old road to Shelburne, and shown as station 31 on a map on file in the office of the Division, and extending in a westerly direction along the State highway in Greenfield, Shelburne, Buckland, Charlemont, Florida, Savoy and North Adams to the Five Corners, so called, in North Adams.

North Shore route, beginning at the junction of Stone and Cabot streets, in Beverly, and following along Stone Street to Lothrop, to Hale, to West Street; thence through Beverly Farms to the Manchester line; bridge, Washington and Summer streets, Manchester, to the Gloucester line; Western Avenue, in Gloucester, to the Annisquam River bridge, omitting the city of Gloucester. Beginning again at a point opposite the Lufkin School on Eastern Avenue, in Gloucester, and extending to the Rockport line; thence through Main Street, Railroad Avenue and Granite Street, in Rockport, to the Gloucester line; thence through Langsford and Washington streets to the junction of Grove and Washington streets, in Gloucester.

Northampton-Pittsfield route, beginning at the junction of the Ashfield-Goshen road, near the Hotel Williams in Williams-

burg, and extending through Williamsburg, Goshen, Cummington, Windsor and Dalton to the junction of Main and Maple streets, in Dalton.

The total amount received during the year in payment for licenses and permits was \$12,597.21.

The expenditure during the year ending Nov. 30, 1921, was \$6,175.72.

RECOMMENDATIONS OF THE DEPARTMENT FOR LEGISLATION RELATING TO THE DIVISION OF HIGHWAYS, INCLUDING THE REGISTRY OF MOTOR VEHICLES.

*State Oversight of Bridges.*

1. Such study of the bridge situation in the Commonwealth as has been possible in conjunction with the necessary work of the Department leads to a recommendation for legislation to provide for more definite control of the construction of new public highway bridges, and the rebuilding of existing bridges upon highways for which the State is responsible in whole or in part.

*Restriction of Loads on Public Highways and Bridges.*

2. Many States have given authority to State highway departments to restrict or entirely prohibit operation of heavy vehicles on improved highways under such conditions as said departments may prescribe. The Division of Highways of the Department of Public Works believes that such action is not wise in Massachusetts, but it is considered important that a better oversight should be established over heavy loads that desire to use the highways, both from the standpoint of protecting the highway and controlling the operation of the vehicle.

*Authority to open up Dangerous Corners.*

3. While the recommendation of the Department made a year ago was not approved by the Legislature, the situation is believed to be of such importance as to justify a similar recommendation at the present time. In the belief that a change may be made in the existing law that will afford the necessary relief, it is recommended that section 14 of chapter 81 of the General Laws be amended.



## REGISTRY OF MOTOR VEHICLES.

*Motor Vehicle Fees.*

4, 5 and 6. A continued study of the problem of meeting the increasing demands for improved highways still further strengthens the belief of the commissioners that increased motor vehicle fees must be secured. The burdens being placed upon highways, bridges and all activities associated with the demand for safer and better highway travel are so directly related to the rapidly developing use of motor vehicles that the Department believes that it is only just that the direct cause of the larger part of this demand should bear the added burden.

The Department has given full consideration to the contention frequently made that a larger portion of this expense should be carried in direct taxation, but legislation enacted along the lines proposed by the Department would still leave as a charge upon direct taxation a cost of highways in the Commonwealth nearly four times that which motor vehicle owners would pay. When it is further taken into account that this direct taxation burden also shows an increased cost met in this way of approximately four times what it was twenty years ago, it will be seen that the general public is already bearing a large burden incident to the newly developed system of transportation.

Consideration has been given by the Department to new methods of taxation that shall meet the demand for larger highway expenditures, but the present method of a direct and definite tax, fixing the charge which the motorists must pay for a year's license fee, with a force already organized for its collection and having the almost universal approval of the men directing the automobile industry in the State, appeals to the Department as the proper method to continue to follow in handling this situation.

To better afford an opportunity for discussion of the issues involved in registration fees for passenger vehicles as distinct from registration fees for motor trucks, legislation is recommended for each type of vehicle. The Department is convinced that while the most serious problem involved in the operation of the passenger car is related to the service which

the highway furnishes to that particular vehicle, in connection with the commercial vehicle the problem is more directly related to the damage occasioned by the heavy vehicle and the necessity for heavy construction to care for its needs.

These recommendations are based upon an exhaustive study of fees established in other States, with such added investigation from an engineering standpoint as to justify the recommendations made. These rates would establish the fees for motor vehicle registration in Massachusetts on a basis less than several other New England States, and but a trifle more than the average in all New England States. When it is recognized that motorists in Massachusetts have available for their use a larger proportionate mileage of improved highway than any other State in the Union, it is believed that the proposed fees are fairly established.

#### *Rulings by Registrar of Motor Vehicles.*

7. To more definitely define the procedure in enforcing certain rulings that the registrar of motor vehicles is authorized by law to make, a change is recommended in chapter 90, section 28 of the General Laws relative to appeals from the decision of the registrar of motor vehicles.

#### *Additional Equipment of Motor Vehicles.*

8. The developed use of the enclosed car and the equipment of practically all cars with curtains and enclosed tops for the winter season emphasize the importance of having motor vehicles equipped with some device that shall show from the rear the purpose of the operator more definitely than it is now possible by any hand signal. It is recommended that such equipment shall be required.

RECOMMENDATIONS OF THE DEPARTMENT FOR LEGIS-  
LATION RELATING TO THE DIVISION OF WATERWAYS  
AND PUBLIC LANDS.

*Harbor Lines in Boston Harbor.*

9. In order to conform to certain requirements fixed by the Federal government, a slight change is necessary in the harbor line established in Boston Harbor in East Boston.

*Harbor Lines in Weymouth Fore River.*

10. The industrial development under way in Weymouth Fore River requires a further extension of an established harbor line above Quincy Point bridge.

*Improvements in Westfield River.*

11. The Division of Waterways and Public Lands of the Department of Public Works already has a limited control over the placing of structures and carrying on of improvements in a portion of the Connecticut River. Emptying into this section of the Connecticut River is the Westfield, or Agawam, River, and in connection with the area extending from the mouth of the river a considerable distance up, there is more or less development requiring such control as will properly protect private parties who are involved and the public interest concerned. To secure such protection, it is recommended that legislation be passed to provide for the care and supervision of that part of Westfield River.

*Public Terminal on the Cape Cod Canal.*

12. Attention has been given by the Division of Waterways and Public Lands to the question of establishing on the Cape Cod Canal a public terminal. Further consideration may be given to this project, and action may be taken, if the same is deemed wise, through a proper co-operation between the local interests and the Commonwealth.



*Investigation of Conditions affecting Pilots.*

13. Various occurrences and conditions that have arisen in some of the harbors outside of Boston indicate that the pilotage service at those ports is in a somewhat unorganized condition. The customs, regulations and statutes affecting that service are based largely on conditions of many years ago, and are designed to meet small ships and natural channels. At the present time the Commonwealth is spending considerable sums for dredging and improving harbors, to encourage commerce. The proper use of these improvements is hindered to a considerable extent by the difficulties the modern steamship of large size experiences under our present pilotage laws. It is recommended that the Division of Waterways and Public Lands be directed to investigate this subject and report its findings, with such recommendations as may seem advisable.

## IN GENERAL.

14. To properly protect such employees of the Department of Public Works not now cared for under the workmen's compensation act, it is recommended that legislation be passed to provide for the payment of compensation to certain employees of the Department of Public Works who receive injuries.

15. Under the present method of construction employed in many different forms of public work, certain materials are used as directly in the work as if they were allowed to stay there upon the completion of the contract. Notwithstanding this situation, it is impossible under existing law to properly protect men who supply to contractors for the Commonwealth this type of material. To secure such dealers in their transactions with contractors upon the public works of the State, the Department recommends an amendment to existing law that will provide "for protection of claims for labor and materials furnished for public works."

## APPENDIX.

## FEDERAL HIGHWAY ACT.

AN ACT TO AMEND THE ACT ENTITLED "AN ACT TO PROVIDE THAT THE UNITED STATES SHALL AID THE STATES IN THE CONSTRUCTION OF RURAL POST ROADS, AND FOR OTHER PURPOSES," APPROVED JULY 11, 1916, AS AMENDED AND SUPPLEMENTED, AND FOR OTHER PURPOSES.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That this Act may be cited as the Federal Highway Act.

SEC. 2. That, when used in this Act, unless the context indicates otherwise —

The term "Federal Aid Act" means the Act entitled "An Act to provide that the United States shall aid the States in the construction of rural post roads, and for other purposes," approved July 11, 1916, as amended by sections 5 and 6 of an Act entitled "An Act making appropriations for the service of the Post Office Department for the fiscal year ending June 30, 1920, and for other purposes," approved February 28, 1919, and all other Acts amendatory thereof or supplementary thereto.

The term "highway" includes rights of way, bridges, drainage structures, signs, guard rails, and protective structures in connection with highways, but shall not include any highway or street in a municipality having a population of two thousand five hundred or more as shown by the last available census, except that portion of any such highway or street along which within a distance of one mile the houses average more than two hundred feet apart.

The term "State highway department" includes any State department, commission, board, or official having adequate powers and suitably equipped and organized to discharge to the satisfaction of the Secretary of Agriculture the duties herein required.

The term "maintenance" means the constant making of needed repairs to preserve a smooth surfaced highway.

The term "construction" means the supervising, inspecting, actual building, and all expenses incidental to the construction of a highway, except locating, surveying, mapping, and costs of rights of way.

The term "reconstruction" means a widening or a rebuilding of the highway or any portion thereof to make it a continuous road, and of sufficient width and strength to care adequately for traffic needs.

The term "forest roads" means roads wholly or partly within or adjacent to and serving the national forests.



The term "State funds" includes for the purposes of this Act funds raised under the authority of the State, or any political or other subdivision thereof, and made available for expenditure under the direct control of the State highway department.

SEC. 3. All powers and duties of the Council of National Defense under the Act entitled "An Act making appropriations for the support of the Army for the fiscal year ending June 30, 1917, and for other purposes," approved August 29, 1916, in relation to highway or highway transport, are hereby transferred to the Secretary of Agriculture, and the Council of National Defense is directed to turn over to the Secretary of Agriculture the equipment, material, supplies, papers, maps, and documents utilized in the exercise of such powers. The powers and duties of agencies dealing with highways in the national parks or in military or naval reservations under the control of the United States Army or Navy, or with highways used principally for military or naval purposes, shall not be taken over by the Secretary of Agriculture, but such highways shall remain under the control and jurisdiction of such agencies.

The Secretary of Agriculture is authorized to cooperate with the State highway departments, and with the Department of the Interior in the construction of public highways within Indian reservations, and to pay the amount assumed therefor from the funds allotted or apportioned under this Act to the State wherein the reservation is located.

SEC. 4. That the Secretary of Agriculture shall establish an accounting division which shall devise and install a proper method of keeping the accounts.

SEC. 5. That the Secretary of War be, and he is hereby, authorized and directed to transfer to the Secretary of Agriculture, upon his request, all war material, equipment, and supplies now or hereafter declared surplus from stock now on hand and not needed for the purposes of the War Department but suitable for use in the improvement of highways, and that the same shall be distributed among the highway departments of the several States to be used in the construction, reconstruction, and maintenance of highways, such distribution to be upon the same basis as that hereinafter provided for in this Act in the distribution of Federal-aid fund: *Provided*, That the Secretary of Agriculture, in his discretion, may reserve from such distribution not to exceed 10 per centum of such material, equipment, and supplies for use in the construction, reconstruction, and maintenance of national forest roads or other roads constructed, reconstructed, or maintained under his direct supervision.

SEC. 6. That in approving projects to receive Federal aid under the provisions of this Act the Secretary of Agriculture shall give preference to such projects as will expedite the completion of an adequate and connected system of highways, interstate in character.

Before any projects are approved in any State, such State, through its State highway department, shall select or designate a system of highways not to exceed 7 per centum of the total highway mileage of such



State as shown by the records of the State highway department at the time of the passage of this Act.

Upon this system all Federal-aid apportionments shall be expended.

Highways which may receive Federal aid shall be divided into two classes, one of which shall be known as primary or interstate highways, and shall not exceed three-sevenths of the total mileage which may receive Federal aid, and the other which shall connect or correlate therewith and be known as secondary or intercounty highways, and shall consist of the remainder of the mileage which may receive Federal aid.

The Secretary of Agriculture shall have authority to approve in whole or in part the systems as designated or to require modifications or revisions thereof: *Provided*, That the States shall submit to the Secretary of Agriculture for his approval any proposed revisions of the designated systems of highways above provided for.

Not more than 60 per centum of all Federal aid allotted to any State shall be expended upon the primary or interstate highways until provision has been made for the improvement of the entire system of such highways: *Provided*, That with the approval of any State highway department the Secretary of Agriculture may approve the expenditure of more than 60 per centum of the Federal aid apportioned to such State upon the primary or interstate highways in such State.

The Secretary of Agriculture may approve projects submitted by the State highway departments prior to the selection, designation, and approval of the system of Federal-aid highways herein provided for if he may reasonably anticipate that such projects will become a part of such system.

Whenever provision has been made by any State for the completion and maintenance of a system of primary or interstate and secondary or intercounty highways equal to 7 per centum of the total mileage of such State, as required by this Act, said State, through its State highway department, by and with the approval of the Secretary of Agriculture, is hereby authorized to add to the mileage of primary or interstate and secondary or intercounty systems as funds become available for the construction and maintenance of such additional mileage.

SEC. 7. That before any project shall be approved by the Secretary of Agriculture for any State such State shall make provisions for State funds required each year of such States by this Act for construction, reconstruction, and maintenance of all Federal-aid highways within the State, which funds shall be under the direct control of the State highway department.

SEC. 8. That only such durable types of surface and kinds of materials shall be adopted for the construction and reconstruction of any highway which is a part of the primary or interstate and secondary or intercounty systems as will adequately meet the existing and probable future traffic needs and conditions thereon. The Secretary of Agriculture shall approve the types and width of construction and reconstruction and the character of improvement, repair, and maintenance in each

case, consideration being given to the type and character which shall be best suited for each locality and to the probable character and extent of the future traffic.

SEC. 9. That all highways constructed or reconstructed under the provisions of this Act shall be free from tolls of all kinds.

That all highways in the primary or interstate system constructed after the passage of this Act shall have a right of way of ample width and a wearing surface of an adequate width which shall not be less than eighteen feet, unless, in the opinion of the Secretary of Agriculture, it is rendered impracticable by physical conditions, excessive costs, probable traffic requirements, or legal obstacles.

SEC. 10. That when any State shall have met the requirements of this Act, the Secretary of the Treasury, upon receipt of certification from the governor of such State to such effect, approved by the Secretary of Agriculture, shall immediately make available to such State, for the purpose set forth in this Act, the sum apportioned to such State as herein provided.

SEC. 11. That any State having complied with the provisions of this Act, and desiring to avail itself of the benefits thereof, shall by its State highway department submit to the Secretary of Agriculture project statements setting forth proposed construction or reconstruction of any primary or interstate, or secondary or intercounty highway therein. If the Secretary of Agriculture approve the project, the State highway department shall furnish to him such surveys, plans, specifications, and estimates therefor as he may require; items included for engineering, inspection, and unforeseen contingencies shall not exceed 10 per centum of the total estimated cost of its construction.

That when the Secretary of Agriculture approves such surveys, plans, specifications, and estimates, he shall notify the State highway department and immediately certify the fact to the Secretary of the Treasury. The Secretary of the Treasury shall thereupon set aside the share of the United States payable under this Act on account of such projects, which shall not exceed 50 per centum of the total estimated cost thereof, except that in the case of any State containing unappropriated public lands exceeding 5 per centum of the total area of all lands in the State, the share of the United States payable under this Act on account of such projects shall not exceed 50 per centum of the total estimated cost thereof plus a percentage of such estimated cost equal to one-half of the percentage which the area of the unappropriated public lands in such State bears to the total area of such State: *Provided*, That the limitation of payments not to exceed \$20,000 per mile, under existing law, which the Secretary of Agriculture may make be, and the same is hereby, increased in proportion to the increased percentage of Federal aid authorized by this section: *Provided further*, That these provisions relative to the public-land States shall apply to all unobligated or unmatched funds appropriated by the Federal Aid Act and payment for approved projects upon



which actual building construction work had not begun on the 30th day of June, 1921.

SEC. 12. That the construction and reconstruction of the highways or parts of highways under the provisions of this Act, and all contracts, plans, specifications, and estimates relating thereto, shall be undertaken by the State highway departments subject to the approval of the Secretary of Agriculture. The construction and reconstruction work and labor in each State shall be done in accordance with its laws and under the direct supervision of the State highway department, subject to the inspection and approval of the Secretary of Agriculture and in accordance with the rules and regulations pursuant to this Act.

SEC. 13. That when the Secretary of Agriculture shall find that any project approved by him has been constructed or reconstructed in compliance with said plans and specifications, he shall cause to be paid to the proper authorities of said State the amount set aside for said project.

That the Secretary of Agriculture may, in his discretion, from time to time, make payments on such construction or reconstruction as the work progresses, but these payments, including previous payments, if any, shall not be more than the United States pro rata part of the value of the labor and materials which have been actually put into such construction or reconstruction in conformity to said plans and specifications. The Secretary of Agriculture and the State highway department of each State may jointly determine at what time and in what amounts payments as work progresses shall be made under this Act.

Such payments shall be made by the Secretary of the Treasury, on warrants drawn by the Secretary of Agriculture, to such official or officials or depository as may be designated by the State highway department and authorized under the laws of the State to receive public funds of the State.

SEC. 14. That should any State fail to maintain any highway within its boundaries after construction or reconstruction under the provisions of this Act, the Secretary of Agriculture shall then serve notice upon the State highway department of that fact, and if within ninety days after receipt of such notice said highway has not been placed in proper condition of maintenance, the Secretary of Agriculture shall proceed immediately to have such highway placed in a proper condition of maintenance and charge the cost thereof against the Federal funds allotted to such State, and shall refuse to approve any other project in such State, except as hereinafter provided.

Upon the reimbursement by the State of the amount expended by the Federal Government for such maintenance, said amount shall be paid into the Federal highway fund for reapportionment among all the States for the construction of roads under this Act, and the Secretary of Agriculture shall then approve further projects submitted by the State as in this Act provided.

Whenever it shall become necessary for the Secretary of Agriculture



under the provisions of this Act to place any highway in a proper condition of maintenance the Secretary of Agriculture shall contract with some responsible party or parties for doing such work: *Provided, however,* That in case he is not able to secure a satisfactory contract he may purchase, lease, hire, or otherwise obtain all necessary supplies, equipment, and labor, and may operate and maintain such motor and other equipment and facilities as in his judgment are necessary for the proper and efficient performance of his functions.

SEC. 15. That within two years after this Act takes effect the Secretary of Agriculture shall prepare, publish, and distribute a map showing the highways and forest roads that have been selected and approved as a part of the primary or interstate, and the secondary or intercounty systems, and at least annually thereafter shall publish supplementary maps showing his program and the progress made in selection, construction, and reconstruction.

SEC. 16. That for the purpose of this Act the consent of the United States is hereby given to any railroad or canal company to convey to the highway department of any State any part of its right of way or other property in that State acquired by grant from the United States.

SEC. 17. That if the Secretary of Agriculture determines that any part of the public lands or reservations of the United States is reasonably necessary for the right of way of any highway or forest road or as a source of materials for the construction or maintenance of any such highway or forest road adjacent to such lands or reservations, the Secretary of Agriculture shall file with the Secretary of the department supervising the administration of such land or reservation a map showing the portion of such lands or reservations which it is desired to appropriate.

If within a period of four months after such filing the said Secretary shall not have certified to the Secretary of Agriculture that the proposed appropriation of such land or material is contrary to the public interest or inconsistent with the purposes for which such land or materials have been reserved, or shall have agreed to the appropriation and transfer under conditions which he deems necessary for the adequate protection and utilization of the reserve, then such land and materials may be appropriated and transferred to the State highway department for such purposes and subject to the conditions so specified.

If at any time the need for any such lands or materials for such purposes shall no longer exist, notice of the fact shall be given by the State highway department to the Secretary of Agriculture, and such lands or materials shall immediately revert to the control of the Secretary of the department from which they had been appropriated.

SEC. 18. That the Secretary of Agriculture shall prescribe and promulgate all needful rules and regulations for the carrying out of the provisions of this Act, including such recommendations to the Congress and the State highway departments as he may deem necessary for preserving and protecting the highways and insuring the safety of traffic thereon.

SEC. 19. That on or before the first Monday in December of each year the Secretary of Agriculture shall make a report to Congress, which shall include a detailed statement of the work done, the status of each project undertaken, the allocation of appropriations, an itemized statement of the expenditures and receipts during the preceding fiscal year under this Act, an itemized statement of the traveling and other expenses, including a list of employees, their duties, salaries, and traveling expenses, if any, and his recommendations, if any, for new legislation amending or supplementing this Act. The Secretary of Agriculture shall also make such special reports as Congress may request.

SEC. 20. That for the purpose of carrying out the provisions of this Act there is hereby appropriated, out of the moneys in the Treasury not otherwise appropriated, \$75,000,000 for the fiscal year ending June 30, 1922, \$25,000,000 of which shall become immediately available, and \$50,000,000 of which shall become available January 1, 1922.

SEC. 21. That so much, not to exceed  $2\frac{1}{2}$  per centum, of all moneys hereby or hereafter appropriated for expenditure under the provisions of this Act, as the Secretary of Agriculture may deem necessary for administering the provisions of this Act and for carrying on necessary highway research and investigational studies independently or in co-operation with the State highway departments and other research agencies, and for publishing the results thereof, shall be deducted for such purposes, available until expended.

Within sixty days after the close of each fiscal year the Secretary of Agriculture shall determine what part, if any, of the sums theretofore deducted for such purposes will not be needed and apportion such part, if any, for the fiscal year then current in the same manner and on the same basis as are other amounts authorized by this Act apportioned among all the States, and shall certify such apportionment to the Secretary of the Treasury and to the State highway departments.

The Secretary of Agriculture, after making the deduction authorized by this section, shall apportion the remainder of the appropriation made for expenditure under the provision of the Act for the fiscal year among the several States in the following manner: One-third in the ratio which the area of each State bears to the total area of all the States; one-third in the ratio which the population of each State bears to the total population of all the States, as shown by the latest available Federal census; one-third in the ratio which the mileage of rural delivery routes and star routes in each State bears to the total mileage of rural delivery and star routes in all the States at the close of the next preceding fiscal year, as shown by certificate of the Postmaster General, which he is directed to make and furnish annually to the Secretary of Agriculture: *Provided*, That no State shall receive less than one-half of 1 per centum of each year's allotment. All moneys herein or hereafter appropriated for expenditure under the provisions of this Act shall be available until the close of the second succeeding fiscal year for which apportionment was



made: *Provided further*, That any sums apportioned to any State under the provisions of the Act entitled "An Act to provide that the United States shall aid the States in the construction of rural post roads, and for other purposes," approved July 11, 1916, and all Acts amendatory thereof and supplemental thereto, shall be available for expenditure in that State for the purpose set forth in such Acts until two years after the close of the respective fiscal years for which any such sums become available, and any amount so apportioned remaining unexpended at the end of the period during which it is available for expenditure under the terms of such Acts shall be reapportioned according to the provisions of the Act entitled "An Act to provide that the United States shall aid the States in the construction of rural post roads, and for other purposes," approved July 11, 1916: *And provided further*, That any amount apportioned under the provisions of this Act unexpended at the end of the period during which it is available for expenditure under the terms of this section shall be reapportioned within sixty days thereafter to all the States in the same manner and on the same basis, and certified to the Secretary of the Treasury and the State highway departments in the same way as if it were being apportioned under this Act for the first time.

SEC. 22. That within sixty days after the approval of this Act the Secretary of Agriculture shall certify to the Secretary of the Treasury and to each of the State highway departments the sum he has estimated to be deducted for administering the provisions of this Act and the sums which he has apportioned to each State for the fiscal year ending June 30, 1922, and on or before January 20 next preceding the commencement of each succeeding fiscal year, and shall make like certificates for each fiscal year.

SEC. 23. That out of the moneys in the Treasury not otherwise appropriated, there is hereby appropriated for the survey, construction, reconstruction, and maintenance of forest roads and trails, the sum of \$5,000,000 for the fiscal year ending June 30, 1922, available immediately and until expended, and \$10,000,000 for the fiscal year ending June 30, 1923, available until expended.

(a) Fifty per centum, but not to exceed \$3,000,000 for any one fiscal year, of the appropriation made or that may hereafter be made for expenditure under the provisions of this section shall be expended under the direct supervision of the Secretary of Agriculture in the survey, construction, reconstruction, and maintenance of roads and trails of primary importance for the protection, administration, and utilization of the national forests, or when necessary, for the use and development of the resources upon which communities within or adjacent to the national forests are dependent, and shall be apportioned among the several States, Alaska, and Porto Rico by the Secretary of Agriculture, according to the relative needs of the various national forests, taking into consideration the existing transportation facilities, value of timber, or other resources served, relative fire danger, and comparative difficulties of road and trail construction.



The balance of such appropriations shall be expended by the Secretary of Agriculture in the survey, construction, reconstruction, and maintenance of forest roads of primary importance to the State, counties, or communities within, adjoining, or adjacent to the national forests, and shall be prorated and apportioned by the Secretary of Agriculture for expenditures in the several States, Alaska, and Porto Rico, according to the area and value of the land owned by the Government within the national forests therein as determined by the Secretary of Agriculture from such information, investigation, sources, and departments as the Secretary of Agriculture may deem most accurate.

(b) Cooperation of Territories, States, and civil subdivisions thereof may be accepted but shall not be required by the Secretary of Agriculture.

(c) The Secretary of Agriculture may enter into contracts with any Territory, State, or civil subdivision thereof for the construction, reconstruction, or maintenance of any forest road or trail or part thereof.

(d) Construction work on forest roads or trails estimated to cost \$5,000 or more per mile, exclusive of bridges, shall be advertised and let to contract.

If such estimated cost is less than \$5,000 per mile, or if, after proper advertising, no acceptable bid is received, or the bids are deemed excessive, the work may be done by the Secretary of Agriculture on his own account; and for such purpose the Secretary of Agriculture may purchase, lease, hire, rent, or otherwise obtain all necessary supplies, materials, tools, equipment, and facilities required to perform the work.

The appropriation made in this section or that may hereafter be made for expenditure under the provisions of this section may be expended for the purpose herein authorized and for the payment of wages, salaries, and other expenses for help employed in connection with such work.

SEC. 24. That in any State where the existing constitution or laws will not permit the State to provide revenues for the construction, reconstruction, or maintenance of highways, the Secretary of Agriculture shall continue to approve projects for said State until three years after the passage of this Act, if he shall find that said State has complied with the provisions of this Act in so far as its existing constitution and laws will permit.

SEC. 25. That if any provision of this Act, or the application thereof to any person or circumstances, shall be held invalid, the validity of the remainder of the Act and of the application of such provision to other persons or circumstances shall not be affected thereby.

SEC. 26. That all Acts or parts of Acts in any way inconsistent with the provisions of this Act are hereby repealed, and this Act shall take effect on its passage.

Approved, November 9, 1921.

HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1921.

TOWN OR CITY.	Year. <sup>1</sup>	ROADS LAID OUT.			Length con- structed (Miles).	Construc- tion Ex- penditures to Dec. 1, 1921.
		From —	Direction.	Length (Miles).		
Abington	1900-1-3	Brockton line	Northeasterly	1.729	1.729	\$57,403 75
Abington	1905-7	Weymouth line (Holbrook Road)	Easterly	1.639	1.639	
Abington	1911-13	Weymouth line	Southerly	2.035	2.035	
Abington	1915	Whitman line (South Bedford Street)	Northerly	.537	.537	
Acton	1899-1900-1-2-19	Concord line	Northwesterly	3.899	3.899	
Acton	1901-7-12-13	Boxborough line to Concord line	Easterly	3.967	3.967	83,416 14
Acushnet	1897	Point about 1/3 mile east of New Bedford line				
Acushnet	1903-1	Rochester line to Rochester line	Northeasterly	.599	.599	44,497 47
Acushnet	1917	Fairhaven line	Northwesterly	2.797	2.797	
Adams	1908	Cheshire line (Orchard Street)	Northerly	1.207	1.207	
Adams	1897	Cheshire line (Maple Grove) <sup>4</sup>	Northerly	1.459	1.459	
Agawam	1911-9-7-6-4-3	Connecticut line to Southend Bridge	Northerly	.569	.569	
Amesbury	1899-1901-3-4	Merrimac line	Northerly	3.993	3.993	24,460 44
Amesbury	1906-7-12	Salisbury line	Easterly	2.243	2.243	
Amherst	1904-1	Hadley line	Northwesterly	1.052	1.052	
Amherst	1913-19	Sunderland line	Northeasterly	.971	.971	
Amherst	1915-19	South Hadley line	Southerly	1.281	1.281	
Andover	1895-6	Lawrence line	Northerly	4.804	4.804	46,856 28
Andover	1897-9-1900-2-3-20	North Reading line	Southerly	1.206	1.206	
Arlington	1916	Lexington line	Northerly	3.147	3.147	
Ashburnham	1911	New Hampshire line	Southeasterly	1.297	1.297	
Ashburnham	1916	Winchendon line to Westminster line <sup>2</sup>	Southeasterly	.672	.672	
Ashby	1899-8-7-6-5-4-1921-17	Fitchburg line to Ashburnham line	Southeasterly	5.475	5.475	72,464 75
Ashby	1910-11-12	Townsend line	Southeasterly	6.647	6.647	
Ashfield	1897-8	1 mile north of Ashfield post office	Southwesterly	1.526	1.526	
Ashland	1903	Southborough line	Southwesterly	1.608	1.608	
Ashland	1910	Frammingham line to Holliston line	Northerly	1.473	1.473	
Athol	1895-6	Orange line	Southerly	1.725	1.725	55,456 27
Athol	1902-3	Phillipston line	Northeasterly	1.607	1.607	
Athol	1919	Petersham line	Northwesterly	1.496	1.496	
Attleboro	1900-1-3	North Attleborough line	Northerly	2.479	2.479	
Attleboro	1909	Norton line	Southwesterly	2.651	2.651	
			Northwesterly	.738	.738	40,239 41
						23,212 78
						163,704 19
						35,282 05
						13,822 90
						103,130 10
						20,722 11



	Auburn		1903-1-1897-6-5-1904-1899-8 1914-20	Oxford line to Worcester line Brocton line to Randolph line (exclusive of Avon Square)	Northeastly	5.299	5.299	
	Avon	.	.	Littleton line to Littleton line.	Northerly	1.637	1.637	70,199 82
	Ayer	.	. 1912	Shirley line	Southeasterly	. 127	. 127	11,896 81
	Ayer	.	. 1913-14	Littleton line	Southeasterly	1.498	1.498	78,143 83
	Ayer	.	. 1916	Sandwich line	Easterly	1.853	1.853	
	Barnstable (north)	.	. 1899-1902-7-10-11	Yarmouth line	Westerly	5.490	5.490	159,183 54
	Barnstable (north)	.	. 1909	Yarmouth line to Sandwich line	Westerly	1.912	1.912	
	Barnstable (south)	.	. 1897-1901-19-18-5-15-14	Mashpee line (Cotuit Road)	Easterly	11.618	11.618	
	Barnstable	.	. 1916-18	Barre Village to Oakham line	Southeasterly	. 817	. 817	
	Barre	.	. 1902-1900-1899-7-1921-20-21	Petersham line	Southeasterly	4.470	4.470	38,211 03
	Barre	.	. 1919	Chester line to Lee line	Westerly	3.171	3.171	
	Becket	.	. 1902-4-5-6-8-16-9-12-13	Washington line to Bonny Rig	Southeasterly	10.812	10.812	241,020 65
	Becket	.	. 1917	Lexington line	Southeasterly	6.906	6.906	
	Bedford	.	. 1897-1902	Carlisle line	Northeasterly	1.079	1.079	22,145 82
	Belchertown	.	. 1903-6	Granby line	Northeasterly	. 569	. 569	
	Bellingham	.	. 1914-7-2-1-1900-8	Franklin line to Mendon line	Westerly	3.228	3.228	32,802 94
	Bellingham	.	. 1904-5-6	Blackstone line	Northeasterly	2.627	2.627	22,866 35
	Bellingham	.	. 1905-2	Lakeville line	Northeasterly	. 553	. 553	
	Berkley	.	. 1906-13	Gill line	Northeasterly	1.258	1.258	11,392 50
	Bernardston	.	. 1911	Bernardston Village to 1918 layout	Westerly	2.702	2.702	
	Bernardston	.	. 1921	Vermont line to Greenfield line	Westerly	. 327	-	27,466 15
	Bernardston	.	. 1915-18	Wenham line	Southeasterly	6.075	6.075	
	Beverly	.	. 1895-7-8	Manchester line	Southerly	2.010	2.010	34,165 31
	Beverly	.	. 1905-6	Burlington line	Southeasterly	3.671	3.671	
	Billerica	.	. 1917-8	Chelmsford line	Northeasterly	3.462	3.462	223,578 59
	Billerica	.	. 1917-20	Rhode Island line to Millville line	Southerly	2.490	2.490	
	Blackstone	.	. 1913-9-2	Bellingham line to Rhode Island line	Northeasterly	2.017	2.017	54,556 86
	Blackstone	.	. 1905	Russell line	Southeasterly	. 055	. 055	
	Blandford	.	. 1918	Dedham line	Northeasterly	4.133	4.133	1,402 18
	Boston	.	. 1908-21	Falmouth line	Northeasterly	1.658	1.658	130,814 35
	Bourne	.	. 1912-11-10-7-5-3	Wareham line (Cohasset Narrows)	Northerly	5.281	5.281	108,645 38
	Bourne	.	. 1897-8-1904-14-15	Plymouth line	Northeasterly	5.556	5.556	
	Bourne	.	. 1913-14	Acton line to Harvard line	Southerly	2.027	2.027	20,518 34
	Boxborough	.	. 1897-9-1905-7	Quincy line to Weymouth Back River	Westerly	3.311	3.311	20,518 34
	Braintree	.	. 1900-2-19	Holbrook line to Quincy line	Southeasterly	1.081	1.081	140,188 99
	Braintree	.	. 1915-17-19	Dennis line to Orleans line	Northerly	4.887	4.887	
	Brewster	.	. 1895-6-7-1901	Orleans line to Harwich line	Northerly	7.786	7.786	31,112 30
	Brewster	.	. 1908	Taunton River (Middleborough line)	Southeasterly	. 035	. 035	
	Bridgewater	.	. 1904-5-6-7-8	East Bridgewater line	Northeasterly	3.466	3.466	39,307 58
	Bridgewater	.	. 1916		Southerly	1.075	1.075	

1 The years indicated show the relative positions of various work done to carry out that described in columns 3 and 4.

<sup>2</sup> Exclusive of Ashburnham Village.



HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1921 — *Continued.*

TOWN OR CITY.	Year. <sup>1</sup>	ROADS LAID OUT.			Length constructed (Miles).	Construction Expenditures to Dec. 1, 1921.
		From —	Direction.	Length (Miles).		
Brimfield	1897-9	Monson line	Southerly	2.338	2.338	\$25,053 43
Brimfield	1901-2	Wales line	Northerly	1.629	1.629	
Brockton	1899-8-7	Easton line	Northeasterly	1.867	1.867	
Brockton	1904	West Bridgewater line	Northerly	.662	.662	40,569 97
Brockton	1914	Stoughton line	Southerly	.604	.604	
Brockton	1900	Abington line	Westerly	.657	.657	
Brookfield	1898-7-1904	East Brookfield line	Southwesterly	.904	.904	
Brookfield	1902-3	West Brookfield line	Easterly	.871	.871	54,612 93
Buckland	1894-5-6-7-8-9-1900-3-7	Shelburne Falls railroad station	Westerly	4.280	4.280	67,043 07
Buckland	1913	Charlemont line (Scott's Bridge)	Southerly	.025	.025	
Burlington	1903-4-5-6	Woburn line to Billerica line	Northwesterly	3.799	3.799	34,809 50
Canton	1905-6-7-8	Stoughton line	Northerly	3.232	3.232	25,555 28
Canton	1921	Milton line	Southerly	1.118	1.118	
Charlemont	1914-12-15-1897-8-9-1915-16-14-13	Savoy line to Buckland line	Easterly	11.919	11.919	207,807 80
Charlton	1907-10-11-12-6-5-19-9-13-14-15	Oxford line to Southbridge line	Southwesterly	8.463	8.463	139,854 88
Charlton	1902-1	Charlton City to Charlton Depot	Northerly	1.913	1.913	
Chatham	1905-6-2-1-1899	Harwich line	Easterly	4.038	4.038	46,032 94
Chatham	1907	Harwell line (Orleans Road)	Southwesterly	3.128	3.128	
Chelmsford	1903-4-8-11	Lowell line to Westford line <sup>2</sup>	Southwesterly	3.774	3.774	
Chelmsford	1915	Lowell line to Billerica line	Southerly	.981	.981	96,477 02
Chelmsford	1898-9-1901-7-10	Lowell line to Tyngsborough line <sup>3</sup>	Northwesterly	2.433	2.433	
Chelsea	1901-4	Chelsea River Lynn Road	Northerly	.959	.959	25,382 66
Cheshire	1910-1899-1900-13-1-2-13-14	Lanesborough line to Adams line	Northerly	6.670	6.670	103,350 83
Chester	1909-11-10-5-4-2-1-1900-1899-1902	Huntington line to Becket line	Northwesterly	6.616	6.616	74,428 00
Chicopee	1897-8-9	Springfield line	Northerly	.918	.918	54,138 18
Chicopee	1917-2-3-4-5-6-7	Chicopee River	Northerly	3.036	3.036	50,290 66
Chilmark	1913-5-6-8-9-11	Gay Head to West Tisbury line	Northeasterly	7.789	7.789	21,781 13
Clarksburg	1905-7-16-9-18	North Adams line to Vermont line	Northerly	2.754	2.754	
Clarksburg	1913	North Adams line to North Adams line	Westerly	.122	.122	
Cohasset	1897-9-1900	About 800 feet east of Hingham line	Easterly	1.733	1.733	16,541 20
Cohasset	1903-2	Scituate line	Northerly	.547	.547	

Colrain.	1898-1901-5	Shelburne line	Northeasterly	2.133	13,443 20
Concord	1897-8	Lincoln line	Westerly	1.462	
Concord	1900-5-6	Acton line (Littletton Road)	Southeasterly	2.128	48,053 06
Concord	1913	Acton line (Harvard Turnpike)	Southeasterly	600	
Conway	1918	Deerfield line	Westerly	3.074	880 83
Cummington	1919	Swift River post office	Northwesterly	3.370	
Cummington	1920-19	Point 1,100 feet easterly of Windsor line through West Cummington			217,613 78
Dalton	1895-6-1903-4	Pittsfield line	Northerly and easterly	2.746	
Dalton	1919	Windsor line	Easterly	2.557	42,972 74
Danvers	1921-15-19-20	Middleton line to Peabody line	Southeasterly	.314	
Danvers	1920-21	Peabody line to Topsfield line	Southeasterly	2.569	125,603 17
Dartmouth	1913-1898-9-1930-1-3-5	Westport line to New Bedford line	Northeasterly	.371	
Dedham	1913-15	Westwood line	Easterly	4.642	38,475 87
Dedham	1908	Boston line (Washington street)	Northerly	1.062	
Dedham	1914	Boston line	Southeasterly	.028	53,689 36
Deerfield	1900-1-2-3-18-10-9-11-8-7-6-5-4-13	About 240 feet southwest of Greenfield line to Whately line	Southerly	1.264	
Deerfield	1895-4-1917	West bank of the Connecticut River to Conway line		7.401	91,832 33
Dennis	1895-6-7-8	Yarmouth line to Brewster line	Northwesterly	4.767	
Dennis	1900-1-2-4-6	Yarmouth line to Harwich line	Northeasterly	4.264	
Dighton	1902-3	Taunton line to Rehoboth line	Easterly	3.234	51,762 93
Dighton	1906-5-6-8-11-12-14-10-9	Taunton line to point 400 feet from Somerset line	Westerly	1.565	
Douglas	1905	Main Street	Southerly	4.534	70,120 22
Douglas	1902-4	Sutton line	Southeasterly	.534	
Dover	1905-7	Needham line	Southeasterly	1.591	19,982 31
Dracut	1905-6-7-19	Near Lowell line (Methuen line)	Westerly	2.181	11,528 29
Dracut	1912	Lowell line to Methuen line	Northwesterly	2.441	
Dudley	1902-4-6-7-16	Point near Webster line to Connecticut line	Northeasterly	3.262	99,229 48
Dudley	1921	Connecticut line	Southeasterly	3.186	
Duxbury	1894-5-7-9-1903-5-8-9	Marshfield line to Kingston line	Northerly	1.355	46,635 29
Duxbury	1914-15	Pembroke line to Kingston line	Southerly	5.159	
Duxbury	1916-18-16-17-18	Bridgewater line to Whitman line	Southeasterly	3.758	59,672 61
East Brookfield	1898-1900-4-20-7-5	Brookfield line to Spencer line	Northerly	3.766	17,207 06
East Brookfield	1912	North Brookfield line	Northeasterly	2.847	
Eastham	1903-9-5-4-6	Wellfleet line to Orleans line	Southeasterly	.744	
			Southerly	6.460	28,132 28

<sup>1</sup> The years indicated show the relative positions of various work done to carry out that described in columns 3 and 4.

<sup>2</sup> Exclusive of 3,336.05 feet near Fletcher Street.

<sup>3</sup> Exclusive of 906.24 feet near railroad crossing.

HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1921 — *Continued.*

TOWN OR CITY.	Year. <sup>1</sup>	ROADS LAID OUT.			Length constructed (Miles).	Length constructed (Miles).	Construction Expenditures to Dec. 1, 1921.
		From —	Direction.	Length (Miles).			
Easthampton	1895-6	Northampton line	Southerly	1.285	1.285		
Easthampton	1900-1	Clark Street to Mount Tom	Southeasterly	1.098	1.098		\$27,565 95
Easthampton	1913	Holyoke line to Northampton line	Northwesterly	.355	.355		
East Longmeadow	1910-6-4	Springfield line	Southeasterly	1.799	1.799		19,867 65
Easton	1900	Brockton line	Southeasterly	.801	.801		4,367 93
Edgartown	1917-1897-9-1900-1-2-3	Oak Bluffs line	Southerly	2.427	2.427		17,590 53
Egremont	1915-20-21	New York line to Great Barrington line	Easterly	4.188	3.402		130,461 98
Egremont	1917	Sheffield line	Northerly	2.060	2.060		
Erving	1900-1899-8-1912-11-14-10-9	Orange line to Millers Falls	Westerly	8.123	8.123		108,163 58
Essex	1912-3-2	Gloucester line	Westerly	1.457	1.457		25,786 06
Fairhaven	1894-5-1916	Mattapoisett line	Southwesterly	2.093	2.093		
Fall River	1917	Acushnet line	Southerly	1.634	1.634		63,306 55
Falmouth	1915	Brightman Street Bridge approach	-	.032	.032		-
Falmouth	1904-5	Bourne line	Southerly	11.615	11.615		42,052 59
Fitchburg	1910-9-8-7-6-5	Mashpee line	Southwesterly	3.912	3.912		
Fitchburg	1900-1-3-4	Ashby line	Southerly	2.540	2.540		
Fitchburg	1897	Lunenburg line	Westerly	.605	.605		51,198 72
Fitchburg	1894-5	Westminster line	Easterly	.973	.973		
Florida	1914-13	North Adams line to Savoy line	Southeasterly	7.192	7.192		134,722 06
Foxborough	1901-2	Mansfield line	Northerly	1.815	1.815		19,537 02
Foxborough	1905-8	Wrentham line	Easterly	1.699	1.699		
Framingham	1905-4	Southborough line	Easterly	2.432	2.432		17,335 26
Framingham	1910	Ashtand line	Northeasterly	.773	.773		
Franklin	1905-7-10	Bellingham line	Northeasterly	2.579	2.579		29,713 89
Franklin	1911	Wrentham line	Northwesterly	1.184	1.184		28,255 70
Freetown	1902-3	New Bedford line to Lakeville line	Northerly	3.193	3.193		44,612 63
Freetown	1908	Fall River line	Northeasterly	.676	.676		
Gardner	1897-8	Templeton line	Southeasterly	2.371	2.371		9,702 98
Gardner	1900-1	Westminster line	Northwesterly	.985	.985		4,522 20
Gay Head	1913	Chilmark line	Northwesterly	3.134	3.134		
Gill	1912	Northfield line to Bernardston line	Westerly	.284	.284		141,829 77
Gloucester	1907	Rockport line	Southerly	.524	.524		
Gloucester	1894-5-8-1905-6-7	Manchester line	Northeasterly	3.464	3.464		
Gloucester	1915-16	Essex line	Southeasterly	2.762	2.762		





HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1921 — *Continued.*

TOWN OR CITY.	Year. <sup>1</sup>	ROADS LAID OUT.			Length con- structed (Miles).	Construc- tion Ex- penditures to Dec. 1, 1921.
		From —	Direction.	Length (Miles).		
Holliston	1906-7-10	Milford line	Northeasterly	3.314	3.314	\$45,213 45
Holliston	1911-12	Ashland line	Southerly	1.610	1.610	22,683 01
Holyoke	1910-0-5	Easthampton line	Southerly	4.167	4.167	97 10
Hopedale	1918	Milford line to Upton line	Westerly	.316	.316	8,142 03
Hudson	1907-6	Marlborough line	Northerly	1.142	1.142	176,586 45
Huntington	1895-6-1917-3-6-9	Russell line to Chester line	Northwesterly	2.649	2.649	40,835 11
Huntington	1918-20	Worthington line	Southerly	8.444	5.366	26,267 08
Ipswich	1909-6-7	Hamilton line	Northerly	2.134	2.134	56,045 43
Ipswich	1910-11	Rowley line	Southeasterly	2.287	2.287	7,342 74
Kingston	1905-6	Duxbury line	Southwesterly	1.016	1.016	80,026 58
Kingston	1916	Duxbury line	Southerly	.811	.811	18,485 36
Kingston	1917-21	Plymouth line	Northwesterly	2.313	.712	167,954 81
Lakeville	1901-2	Middleborough line	Southerly	3.570	3.570	157,032 44
Lakeville	1910-11-12	Freetown line to Berkley line	Northwesterly	4.790	4.790	39,165 93
Lancaster	1902	Clinton line to Sterling line	Northeasterly	1.249	1.249	31,192 99
Lanesborough	1911-13-12	Cheshire line to Pittsfield line	Westerly	2.290	2.290	54,916 98
Lanesborough	1919	Point 150 feet north of Pratt Brook	Southerly	.990	.990	
Lanesborough	1921	Two bridges and approaches on New Ash- ford Road	Southerly	.178	.178	
Lawrence	1896	Methuen line	Northerly	.267	.267	
Lawrence	1915	Methuen line	Southerly	.543	.543	
Lee	1906	Lenox line to Stockbridge line	Easterly	1.020	1.020	
Lee	1900	Lenox line to Lee post office	Southerly	1.259	1.259	
Lee	1906-15	Stockbridge line to East Lee	Northeasterly	3.271	3.271	
Lee	1894-5-6-1908-9-13-12	Becket line	Westerly	5.156	5.156	
Leicester	1894-5-1920-1896-8-9	Worcester line to Spencer line	Westerly	5.437	5.437	
Lenox	1905-4-5	Pittsfield line	Southerly	3.181	3.181	
Lenox	1906	Stockbridge and Lee line	Northerly	2.200	2.200	
Lenox	1900-1899-1901	Lee line	Northwesterly	2.282	2.282	
Leominster	1902-1-15	Sterling line	Northerly	2.549	2.549	
Lexington	1898-7-6-5	Lincoln line	Easterly	3.446	3.446	
Lexington	1900	Bedford line	Southeasterly	.845	.845	
Lexington	1916	Arlington line	Northwesterly	.333	.333	
Lexington	1919	Woburn line to Lowell Street	Southwesterly	.383	.383	

	1895-6-7		Concord line to Lexington line		Easterly		2,060		2,060		2,060		17,392 38
Lincoln	1902-3-4-8-19		Acton line to Groton line (Great Road)		Northwesterly		5,256		5,256		337		170,024 14
Littleton	1902		Westford line		Southwesterly		3,235		3,235		.969		
Littleton	1912-20-12-13-18		Ayer line (King Street)		Southwesterly		1,334		1,334		351		22,990 33
Lowell	1897		Tyngsborough line		Easterly		5,886		5,886		.905		64,195 46
Lowell	1897-8		Chelmsford line		Northwesterly		1,985		1,985		.369		
Lowell	1900		Tewksbury line		Northwesterly		.403		.403		.031		
Lunenburg	1898-9-1900-1-3-10-13		Fitchburg line to Shirley line		Easterly		1,491		1,491		.151		137,208 17
Lynn	1899		Revere line (Shore Road)		Northwesterly		.720		.720		.493		6,304 93
Lynn	1914		Lynnfield line		Southwesterly		4,834		4,834		1,776		38,557 65
Lynn	1916		Salem line		Westerly		3,114		3,114		2,590		86,318 61
Lynn	1917		Foxhill Bridge (Saugus line)		Easterly		1,278		1,278		8,277		54,626 51
Lynnfield	1914-21		Lynn line to Newburyport Turnpike		Northwesterly		5,724		5,724		2,088		70,374 44
Lynnfield	1920		Saugus line to Peabody line (Newburyport Turnpike)		Westerly		1,162		1,162		2,044		24,528 57
Malden	1918		Mattapoisett line to Wareham line		Easterly		.862		.862		.395		30,974 24
Mansfield	1901		Rochester line		Southwesterly		.173		.173		.928		12,230 89
Mansfield	1906		Sudbury line		Westerly		.918		.918		1,206		35,759 36
Marion	1902-1-1899-7-1914-3-1894-5		Northborough line		Northwesterly		1,025		1,025		4,109		23,486 74
Marion	-1		Hudson line		Westerly		3,688		3,688		3,465		153,940 98
Marion	1903		Duxbury line to Scituate line		Southwesterly		8,978		8,978				63,281 91
Marlborough	1897-1904-3-2-4		Falmouth line to Sandwich line		Northwesterly								
Marlborough	1897-9-1900-1-16		Barnstable line		Westerly								
Marlborough	1908-11		Fairhaven line		Westerly								
Marshfield	1894-6-8-9-1901-2-4-7-10-9		Marion line		Westerly								
Marshfield	1911-12-13-14		Somerville line (at Mystic River)		Westerly								
Mashpee	1916		Saugus line		Westerly								
Mashpee	1894-5		Malden line to Saugus line		Westerly								
Mattapoisett	1903-1-1900		Hopedale line		Westerly								
Mattapoisett	1907		Uxbridge line		Westerly								
Medford	1906		Amesbury line		Westerly								
Melrose	1917		Haverhill line		Westerly								
Mendon	1918		Dracut line to Lawrence line		Westerly								
Mendon	1921		Lawrence line to Haverhill line		Westerly								
Merrimac	1901-3		Bridgewater line (Taunton River)		Westerly								
Merrimac	1910-1897-8-9		Rochester line		Westerly								
Methuen	1912-16-15				Westerly								
Methuen	1896-1900-1-2-8-7-6				Westerly								
Middleborough	1906-7-8-6				Westerly								
Middleborough	1903-2-1898-8-6-1904-5-6				Westerly								

<sup>1</sup> The years indicated show the relative positions of various work done to carry out that described in columns 3 and 4.



HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1921 — *Continued.*

TOWN OR CITY.	Year. <sup>1</sup>	ROADS LAID OUT.			Length con- structed (Miles).	Construc- tion Ex- penditures to Dec. 1, 1921.
		From —	Direction.	Length (Miles).		
Middleton	1921-14-13-12	Danvers line (at Ipswich River) to North Andover line <sup>2</sup>	Northwesterly	4.553	2.655	\$130,611 94
Milford	1905-4	Hopedale line	Southeasterly	1.745	1.745	31,163 99
Milford	1909-10	Holliston line	Southeasterly	1.801	1.801	
Millbury	1900-3-4	Worcester line	Southeasterly	1.612	1.612	
Millbury	1902	Grafton line to Worcester line	Westerly	.782	.782	28,157 11
Millbury	1906	Sutton line	Northerly	.587	.587	
Millville	1899-1900-2	Uxbridge line to Blackstone line	Southeasterly	1.657	1.657	
Milton	1899-1917-1899-1900	Neponset River	Southeasterly	1.057	1.057	15,573 20
Monson	1908	Palmer line to Palmer line	Easterly	.287	.287	
Monson	1901-5	Palmer line to Brimfield line	Southeasterly	.394	.394	16,302 49
Monson	1894	Railroad Bridge towards Palmer	Northerly	.934	.934	
Montague	1899-8-1904-6-10	Turners Falls to Millers Falls	Southeasterly	4.052	4.052	52,267 21
Montague	1905-9	Connecticut River Bridge	Northeasterly	1.678	1.678	
Nantucket	1903-1896-1901-1900-1899-7-6-5-4	First Mile Stone, Siasconset	Easterly	6.479	6.479	53,049 14
Natick	1901	Wellesley line	Southwesterly	1.135	1.135	21,634 66
Natick	1903	Framingham line	Easterly	2.069	2.069	
Needham	1901	Newton line (Charles River)	Southwesterly	.995	.995	11,612 71
Needham	1905	Dover line (Charles River)	Northerly	1.040	1.040	
New Ashford	1921	Eight bridges and approaches on Lanesborough Road	Northerly	1.000	1.000	
New Braintree	1897	Hardwick line to Ware line	Southerly	.174	.174	3,944 07
New Braintree	1903	New Braintree Village	Northerly	.223	.223	34,042 79
Newbury	1899-1900-1-2-4-6-5	Newburyport line to Rowley line	Southerly	4.231	4.231	
Newburyport	1896-7-8	West Newbury line	Easterly	1.754	1.754	34,307 69
Newburyport	1913	Merrimac Street	Northeasterly	.094	.094	46 85
Newburyport	1918	Newbury line	Northeasterly	.372	.372	6,836 54
New Marlborough	1917	Sheffield line	Easterly	.230	.230	16,602 60
Newton	1901	Needham line	Easterly	1.032	1.032	
Norfolk	1895	Wrentham line to Walpole line	Northeasterly	1.446	1.446	95,637 05
North Adams	1895-4-6-7	Williamstown line	Easterly	2.173	2.173	
North Adams	1903-2-1-1900	Adams line	Northerly	2.319	2.319	
North Adams	1913	Florida line	Westerly	3.644	3.644	



HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1921 — *Continued.*

TOWN OR CITY.	Year. <sup>1</sup>	ROADS LAID OUT.			Length con- structed (Miles).	Construc- tion Ex- penditures to Dec. 1, 1921.
		From —	Direction.	Length (Miles).		
Pembroke	1905-15	Hanover line to Duxbury line.	Southeasterly	4.345	4.345	\$27,988 16
Peperell	1907-10-11-14	Groton line to Nashua River Bridge	Southeasterly	3.577	3.577	35,651 83
Petersham	1918-19	Barre line to Athol line	Northerly	8.186	8.186	147,197 03
Phillipston	1902-1897-8-1904-9	Athol line to Templeton line	Easterly	2.785	2.785	31,134 20
Pittsfield	1897-1906-7	Dalton line	Southwesterly	2.365	2.365	
Pittsfield	1894-8-1901-2-13-9	Hancock line	Easterly	3.643	3.643	
Pittsfield	1905-4	Lenox line	Northerly	1.580	1.580	108,192 18
Pittsfield	1913	Lanesborough line	Southerly	1.465	1.465	
Plainfield	1899-4-5-1911	Wrentham line to North Attleborough line	Southerly	2.293	2.293	6,075 98
Plymouth	1914-13-11-10-7-1894-6-5-7-8-1902-4-16	Bourne line	Northerly and westerly	14.300	14.300	145,323 65
Princeton	1897-1900-2-3	Princeton Depot	Easterly	2.230	2.230	21,948 85
Provincetown	1903-1-3	Truro line	Westerly	1.102	1.102	
Provincetown	1920	Point on 1903 layout to point on Bradford Street	Westerly	.238	.238	23,418 26
Provincetown	1916	New York, New Haven & Hartford Railroad (near depot)	Northwesterly	2.528	2.528	
Quincy	1899	Fore River (Weymouth line)	Westerly	.494	.494	
Quincy	1902-9	Braintree line	Northwesterly	.949	.949	
Quincy	1904	Randolph line to Milton line	Northerly	1.232	1.232	71,035 35
Quincy	1921	Braintree line (Willard Street)	Northerly	.552	.552	
Randolph	1902-3-9	Quincy line	Southerly	1.900	1.900	49,560 90
Randolph	1915	Avon line	Northerly	1.810	1.810	
Raynham	1901-2-3	Taunton line	Northeasterly	1.477	1.477	52,862 99
Raynham	1912-13-15	Easton line to Taunton line	Southerly	4.176	4.176	
Reading	1899-1900-15	Stoneham line to Reading Depot	Northerly	1.256	1.256	31,010 71
Reading	1902-3	Reading Square to point near North Reading line	Northerly	2.667	2.667	
Rehoboth	1895-6-9-1903-5-6-7-8	Seekonk line to Dighton line	Easterly	6.034	6.034	59,715 93
Rehoboth	1912	Swansea line to Seekonk line	Northwesterly	.512	.512	
Revere	1897	Boston line	Northeasterly	.577	.577	
Revere	1899-1913	Saugus line	Southerly	1.112	1.112	406,998 10
Revere	1913-16	Point of Pines	Southwesterly	3.332	3.332	
Richmond	1907-6-5-4-3-2-1-1899-8-7	Pittsfield line	Southwesterly	4.017	4.017	33,348 45



Rochester	1903	Acushnet line to Marion line	Easterly	5,270	7,948 43
Rochester	1909	Middleborough line to Wareham line	Southeasterly	.900	13,515 80
Rochester	1902-6-5	Abington line to Hanover line	Easterly	2,354	21,061 52
Rockport	1906-2-10	Gloucester line	Northeasterly	1,600	22,767 50
Rowley	1905-7-8-9-11	Newbury line to Ipswich line	Southwesterly	3,633	93,959 40
Russell	1896-4-6-7-8-9-8-5-4	Westfield line to Huntington line	Northwesterly	6,676	9,734 21
Russell	1917	Blandford line	Easterly	3,044	9,734 21
Rutland	1917-19-4	Oakham line to Holden line	Easterly	5,549	71,012 13
Salem	1901-9	Swampscott line	Northerly	1,398	97,986 20
Salem	1914	Lynn line	Northeasterly	1,912	72,414 96
Salisbury	1911-12	Amesbury line	Easterly	1,742	1,641
Salisbury	1913-14	Salisbury Centre	Easterly	2,172	.864
Salisbury	1910	Seabrook, N. H., line	Southeasterly	2,410	3,972
Salisbury	1912-5-4	Bridge over Merrimac River	Northeasterly	1,559	1,803
Salisbury	1916	Seabrook, N. H., line (Beach Road)	Southerly	2,020	5,374
Sandwich	1897-8-1900-2-10-12-13-19-13	Barnstable line to Bourne line	Northwesterly	7,589	2,757
Sandwich	1919	On Mashpee Road	Southerly	1,818	3,272
Sandwich	1914	Mashpee line to Barnstable line	Easterly	.114	.638
Saugus	1898-1913	Revere line to near drawbridge over Saugus River	Northeasterly	1,641	5,874
Saugus	1906-14	Melrose line to Newburyport Turnpike	Easterly	.864	2,587
Saugus	1917-19	Melrose line to Lynnfield (Newburyport Turnpike)	Northerly	3,972	423
Savoy	1913-14	Florida line to Charlemont line	Easterly	1,803	2,620
Seakunk	1906-1895-4-1900-3-6-8-9-10	Cohasset line to Marshfield line	Southeasterly	5,374	2,159
Seekonk	1904-2-1-1900	Rhode Island line to Rehoboth line	Easterly	2,757	7,220
Seekonk	1913-11-10	Rehoboth line	Northwesterly	3,272	3,618
Sharon	1908	Foxborough line	Northeasterly	.638	4,854
Sheffield	1912-13-14-15-18	Connecticut line to Egremont line	Northerly (Under Mountain Road)	5,874	1,853
Sheffield	1914-15-18	Connecticut line	Northerly (Ashley Falls Road)	2,587	2,401
Sheffield	1917	New Marlborough line to Connecticut line	Westerly	423	5,379
Sheffield	1919	Great Barrington line	Southerly	2,620	.225
Shelburne	1897-6-5-4	Colrain line	Easterly	2,159	.061
Shelburne	1916-19	Shelburne Falls to Greenfield line	Westerly	7,220	
Shirley	1913-14	Ayer line to Lunenburg line	Westerly	3,618	
Shrewsbury	1895-6-7-8-9-1900-4	Worcester line to Northborough line	Northeasterly	4,854	
Somerset	1915-14	Swansea line	Easterly	1,853	
Somerset	1903-4-5	Swansea line	Southeasterly	2,401	
Somerset	1910-2-1-1895-6-7-9-1900	Point near Dighton line	Southerly	5,379	
Somerset	1909	Riverside Avenue to Brayton Avenue	Westerly	.225	
Somerset	1915	Taunton, Great River Bridge approach	Easterly	.061	

1 The years indicated show the relative positions of various work done to carry out that described in columns 3 and 4.

HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1921 — *Continued.*

TOWN OR CITY.	Year. <sup>1</sup>	ROADS LAID OUT.			Length con- structed (Miles).	Construc- tion Ex- penditures to Dec. 1, 1921.
		From —	Direction.	Length (Miles).		
Somerville	1908	Medford line	Southeasterly	1.160	1.160	\$50,441 07
Somerville	1914	Middlesex Avenue (from point on 1908 layout)	Northerly	.423	.423	
Southampton	1905-9	Easthampton line	Southwesterly	.708	.708	13,948 99
Southborough	1907	Ashland line	Westerly	.653	.653	
Southborough	1909	Framingham line	Westerly	1.143	1.143	22,148 17
Southborough	1903-5	Westborough line	Easterly	1.895	1.895	
Southbridge	1907	Sturbridge line	Southeasterly	.448	.448	
Southbridge	1902	Charlton line	Southwesterly	.909	.909	11,125 21
South Hadley	1915	Amherst-Granby-South Hadley line	Southerly	.308	.308	
South Hadley	1912-9-4-3	Granby line	Southerly	4.637	4.637	67,656 97
South Hadley	1895-7-8-9-1900	Granby line	Southwesterly (Granby Road)	2.419	2.419	
Spencer	1906-11-6-10	East Brookfield line	Northeasterly	1.459	1.459	45,074 11
Spencer	1897-1900-1	Leicester line	Southwesterly	1.600	1.600	
Sterling	1905-7-9-14-15	Lancaster line	Westerly	2.413	2.413	118,310 29
Sterling	1906-7-14-13-1897-8-1912	Leominster line to West Boylston line	Southerly	5.745	5.745	
Stockbridge	1905-9	Lee line	Westerly	1.066	1.066	
Stockbridge	1906	Lee line	Southwesterly	2.229	2.229	39,321 16
Stockbridge	1917	Great Barrington line	Northerly	.958	.958	
Stoneham	1898-7	Marble Street	Southerly	.569	.569	14,952 32
Stoneham	1900-1	Reading line	Southerly to Farm Hill Station	1.013	1.013	
Stoughton	1903-2	Canton line	Southerly	1.162	1.162	
Stoughton	1905-4	Easton line	Northerly	2.141	2.141	41,891 41
Stoughton	1914-15	Brookton line	Northwesterly	2.258	2.258	
Sturbridge	1907-1897-1903-4-9	Southbridge line	Northwesterly	2.353	2.353	29,404 97
Sudbury	1897-8-1900-1-2-1	Marlborough line to Wayland line	Northwesterly	4.889	4.889	37,053 79
Sudbury	1903	Wayland line to Wayland line	Easterly	.225	.225	
Sunderland	1913-14-9-7-6-4-3-1897	Amherst line	Northwesterly to Deerfield	3.971	3.971	51,271 14
Sutton	1899-1901-2-20-4-3	Millbury line to Douglas line	Southeasterly	6.897	6.897	15,405 41
Swampscott	1897-1900-1	Salem line	Southwesterly	1.491	1.491	29,433 53
Swansea	1915-16	Rhode Island line to bridge over Lees River	Easterly	2.811	2.811	
Swansea	1903-7-12-11-10-9-6-3	Rehoboth line to Somerset line	Southeasterly	6.649	6.649	48,474 53

	1906-5-13	1901-1900-1899-8-6-5	Dighton line	Northerly (Somerset Avenue)	1.357	1.357
Taunton	.	.	Dighton line	Northeasterly (Winthrop Street)	2.933	2.933
Taunton	.	.	Dighton line	Southwesterly	.383	.383
Taunton	.	.	Berkley line	Southwesterly	2.366	2.366
Taunton	.	.	Lakeville line	Southwesterly	1.477	1.477
Taunton	.	.	Norton line	Southwesterly	2.116	2.116
Templeton	.	.	Gardner line	Northwesterly	2.002	2.002
Templeton	.	.	Phillipston line	Northeasterly	3.686	3.686
Templeton	.	.	Winchendon line	Southerly	1.350	-
Tewksbury	.	.	Lowell line to Wilmington line	Southwesterly	6.186	6.186
Tisbury	.	.	West Tisbury line to Vineyard Haven	Northeasterly	1.926	1.926
Topsfield	.	.	Danvers line (Newburyport Turnpike)	Northeasterly	3.498	-
Townsend	.	.	Groton line to Ashby line	Westerly	6.515	6.515
Truro	.	.	Wellfleet line to Provincetown line	Northerly and northwesterly	10.093	10.093
Tyngsborough	.	.	Lowell line	Northerly	2.942	2.942
Tyngsborough	.	.	Chelmsford line to New Hampshire line	Northwesterly	3.998	3.998
Upton	.	.	Grafton line to Hopedale line	Southwesterly	5.187	5.187
Uxbridge	.	.	Blackstone line	Northwesterly	3.617	3.617
Uxbridge	.	.	Northbridge line	Southwesterly	1.198	1.198
Uxbridge	.	.	Mendon line	Westerly	1.041	1.041
Wales	.	.	Brimfield line to Connecticut line	Southerly	5.100	5.100
Walpole	.	.	Norfolk line	Northeasterly	3.326	3.326
Walpole	.	.	Norwood line	Southwesterly	1.951	1.951
Waltham	.	.	Weston line	Easterly	.952	.952
Ware	.	.	New Braintree line	Southerly	2.282	2.282
Ware	.	.	Ware Village	Southwesterly	1.894	1.894
Ware	.	.	Ware Village	Westerly	2.626	2.626
Wareham	.	.	Rochester line	Southwesterly	4.402	4.402
Wareham	.	.	Wareham Narrows	Easterly	4.715	4.715
Wareham	.	.	Buttermilk Bay Bridge	Westerly to Onset	1.924	1.924
Wareham	.	.	Marion line	Northeasterly	2.195	2.195
Warren	.	.	Palmer line to West Brookfield line	Easterly	4.940	4.940
Washington	.	.	Hinsdale line	Southerly	2.229	2.229
Watertown	.	.	Waltham line	Easterly	.850	.850
Wayland	.	.	Weston line to Sudbury line <sup>2</sup>	Westerly	2.860	2.860
Webster	.	.	Oxford line	Southerly	.831	.831
Webster	.	.	Connecticut line	Northwesterly	1.172	1.172
Wellesley	.	.	Natick line	Easterly	1.176	1.176
Wellfleet	.	.	Eastham line to Truro line	Northerly	7.366	7.366

<sup>1</sup> The years indicated show the relative positions of various work done to carry out that described in columns 3 and 4.

<sup>2</sup> Exclusive of 250 foot gap at bridge over Sudbury River.



HIGHWAYS LAID OUT OR CONTRACTED FOR AND CONSTRUCTION EXPENDITURES TO DEC. 1, 1921 — *Concluded.*

TOWN OR CITY.	Year. <sup>1</sup>	ROADS LAID OUT.			Length con- structed (Miles).	Construc- tion Ex- penditures to Dec. 1, 1921.
		From —	Direction.	Length (Miles).		
Wenham . . . . .	1897-1901-3-8 . . . . .	Beverly line to Hamilton line . . . . .	Northerly . . . . .	1.762	1.762	\$13,258 85
Westborough . . . . .	1897 . . . . .	Northborough line . . . . .	Southerly . . . . .	.714	.714	22,570 37
Westborough . . . . .	1903-6 . . . . .	Southborough line . . . . .	Southwesterly . . . . .	2.277	2.277	69,241 51
West Boylston . . . . .	1897-8-1915-13 . . . . .	Worcester line to Sterling line . . . . .	Northerly . . . . .	4.303	4.303	16,439 39
West Bridgewater . . . . .	1900-1-2-4 . . . . .	Brockton line to Bridgewater line . . . . .	Southerly . . . . .	3.161	3.161	32,765 34
West Brookfield . . . . .	1899-1900-1 . . . . .	Brookfield line . . . . .	Southwesterly . . . . .	1.506	1.506	
West Brookfield . . . . .	1905-13 . . . . .	Warren line . . . . .	Easterly . . . . .	1.157	1.157	
West Brookfield . . . . .	1899 . . . . .	Ware line to Ware line . . . . .	Northeasterly . . . . .	.151	.151	
Westfield . . . . .	1894-6-8-9 . . . . .	West Springfield line . . . . .	Westerly . . . . .	2.220	2.220	46,047 77
Westfield . . . . .	1902-1-1900-1899-8 . . . . .	Russell line . . . . .	Southwesterly . . . . .	3.584	3.584	
Westford . . . . .	1902-12 . . . . .	Littleton line to Chelmsford line . . . . .	Northeasterly . . . . .	4.150	4.150	14,422 98
Westford . . . . .	1903 . . . . .	Westford Centre . . . . .	Southwesterly . . . . .	.799	.799	
Westminster . . . . .	1894-5-6-7-8-9-1918-3 . . . . .	Fitchburg line to Gardner line . . . . .	Westerly . . . . .	5.755	5.755	65,874 59
Westminster . . . . .	1915 . . . . .	Ashburnham line to Fitchburg line . . . . .	Southwesterly . . . . .	2.268	2.268	58,726 45
West Newbury . . . . .	1895-6-7-1909-6-5-4-3 . . . . .	Newburyport line to Groveland line . . . . .	Southwesterly . . . . .	5.105	5.105	16,212 44
Weston . . . . .	1899-8 . . . . .	Wayland line . . . . .	Easterly . . . . .	3.152	3.152	47,746 81
Westport . . . . .	1913-1898-7-6-4-1917 . . . . .	Dartmouth line to Fall River line . . . . .	Northwesterly . . . . .	4.670	4.670	32,944 46
West Springfield . . . . .	1912-6-5-1895-6 . . . . .	Westfield line . . . . .	Easterly . . . . .	2.704	2.704	30,095 76
West Tisbury . . . . .	1895-6-7-1904 . . . . .	Tisbury line to Chilmark line . . . . .	Southwesterly . . . . .	5.358	5.358	8,080 05
Westwood . . . . .	1916-1899-1900 . . . . .	Norwood line to Dedham line . . . . .	Northerly . . . . .	1.071	1.071	
Weymouth . . . . .	1895-7-5-1913 . . . . .	Fore River Bridge . . . . .	Easterly . . . . .	1.780	1.780	64,722 35
Weymouth . . . . .	1915 . . . . .	Hingham line . . . . .	Northwesterly . . . . .	2.150	2.150	39,175 24
Weymouth . . . . .	1910-8-7-4-3 . . . . .	Abington line . . . . .	Northerly . . . . .	4.937	4.937	48,539 03
Weymouth . . . . .	1894 . . . . .	Holbrook line to Abington line . . . . .	Southwesterly . . . . .	.248	.248	54,966 34
Whately . . . . .	1906-5-13-5-4-3-2-1-1899 . . . . .	Hatfield line to Deerfield line . . . . .	Northerly . . . . .	4.026	4.026	34,688 22
Whitman . . . . .	1894-5-6 . . . . .	Brookton line . . . . .	Easterly . . . . .	1.697	1.697	
Whitman . . . . .	1913-14 . . . . .	East Bridgewater line to Abington line . . . . .	Northerly . . . . .	2.293	2.293	
Wilbraham . . . . .	1901-1897-6-5-1901-3-13-3-4 . . . . .	Springfield line to Palmer line . . . . .	Easterly . . . . .	5.055	5.055	
Williamsburg . . . . .	1896-8-1901-3-16-3 . . . . .	Goshen line . . . . .	Southwesterly . . . . .	2.680	2.680	

	1895-6-8-1903-1898		North Adams line		Northwesterly		1.465		1.465
Williamstown	1917	.	Vermont line	.	Southeasterly	.	1.197	.	1.197
Williamstown	1907	.	Williamstown Village	.	Southerly	.	.133	.	.133
Williamstown	1921	.	Two bridges and approaches on the New Ashford Road	.	Northerly	.	.107	.	.107
Williamstown	1921	.	Near Williamstown Village	.	Southerly	.	5.710	.	5.710
Wilmington	1907-8-10-11	.	Tewksbury line to Woburn line	.	Southeasterly	.	3.678	.	3.678
Winchendon	1921-7	.	Templeton line <sup>2</sup>	.	Northeasterly	.	4.383	.	4.383
Winchendon	1907	.	Winchendon Springs	.	Westerly (Maple Street)	.	1.347	.	1.347
Winchendon	1916	.	Ashburnham line	.	Northwesterly	.	3.164	.	3.164
Winchendon	1919	.	New Hampshire line	.	Southeasterly	.	2.493	.	2.493
Winchester	1900-1899	.	Woburn line to Arlington line	.	Southerly	.	1.952	.	1.952
Windsor	1897-1902-3-13-15-6-7-19	.	Cummington line to Dalton line	.	Westerly	.	8.466	.	8.466
Woburn	1915-16-17	.	Lexington line	.	Northeasterly	.	2.471	.	2.471
Woburn	1900-1-2	.	Winchester line to Burlington line	.	Northwesterly	.	2.033	.	2.033
Woburn	1912-13	.	Wilmington line	.	Southerly	.	.982	.	.982
Woburn	1920	.	Reading line	.	Southerly	.	1.552	.	1.552
Worcester	1896-7	.	Paxton line	.	Easterly	.	1.356	.	1.356
Worcester	1897-1903	.	Holden line	.	Southerly	.	1.500	.	1.500
Wrentham	1900-5	.	West Boylston line	.	Southerly	.	1.216	.	1.216
Wrentham	1912-13	.	Franklin line	.	Easterly	.	2.040	.	2.040
Wrentham	1915	.	Boxborough line	.	Southwesterly	.	2.549	.	2.549
Wrentham	1897-8-1902-14-1-1900-1899	.	Norfolk line to Plainville line	.	Southwesterly	.	4.927	.	4.927
Yarmouth	1894-5-6	.	Dennis line to Barnstable line	.	Westerly (North Road)	.	3.716	.	3.716
Yarmouth	1895-6-7	.	Barnstable line to Dennis line	.	Easterly (South Road)	.	5.082	.	5.082
							1,393.548		1,371.608
									\$17,039,356 67

<sup>1</sup> The years indicated show the relative positions of various work done to carry out that described in columns 3 and 4.

<sup>2</sup> Exclusive of 190 foot gap at railroad crossing.

## CONTRACT PRICES ON STATE HIGHWAY

TOWN OR CITY.	Contractor.	EXCAVATION.			Plain Concrete Masonry (Cubic Yard).	BITUMINOUS SURFACING.			Concrete Surfacing (Cubic Yard).
		Earth (Cubic Yard).	Borrow (Cubic Yard).	Ledge (Cubic Yard).		Bituminous Con- crete (Ton).	Asphalt (Gallon).	Tar (Gallon).	
Acton Bridge . . .	B. E. Savage . . .	-	-	\$4 00	-	-	\$0 50	-	-
Agawam . . .	Hassam Paving Company	\$1 20	\$1 35	6 00	\$25 00	-	17	-	-
Andover . . .	James H. Fannon . . .	-	-	4 00	25 00	-	18	-	-
Ashby . . .	Lane Construction Cor- poration.	1 50	-	4 00	30 00	-	23	-	-
Ashfield . . .	A. Palladino . . .	1 00	1 00	2 00	12 00	-	-	-	-
Ashland Bridge . . .	Perini & Sons . . .	1 50	1 75	-	-	-	-	-	-
Barre-Oakham . . .	Canton Engineering Com- pany.	1 20	1 25	4 00	22 00	-	17	-	-
Bernardston . . .	Lane Construction Cor- poration.	1 25	-	3 00	25 00	-	16	-	-
Boston . . .	J. C. Coleman . . .	60	-	5 00	15 00	-	20	-	-
Brookfield-West Brook- field.	Middlesex Construction Company.	1 30	1 50	4 00	20 00	-	-	-	\$13 25
Burlington . . .	Sweeney Construction Company.	90	1 25	7 00	10 00	-	09	-	-
Canton . . .	A. J. Mitchell . . .	1 50	-	5 00	22 50	-	17	-	-
Clinton . . .	Fred E. Ellis . . .	1 35	1 35	6 00	-	-	\$0 24	-	-
Danvers . . .	William A. Jones . . .	1 15	-	2 50	-	-	19	-	-
Danvers-Topsfield . . .	T. J. McCue . . .	1 25	1 00	4 00	14 00	-	15½	-	-
Dracut . . .	Hanscom Construction Company.	1 40	1 40	3 00	30 00	-	19	-	-
East Bridgewater . . .	J. A. Houle . . .	-	-	-	-	-	-	-	-
East Brookfield . . .	Carlo Bianchi & Co. . .	2 25	2 25	-	25 00	-	-	-	15 50
East Brookfield-Spencer	Hinman & Rudiger . . .	2 00	-	5 00	30 00	-	-	35	-
Egremont . . .	D. S. McGrath, Inc. . .	1 00	1 25	3 00	17 00	-	19	-	-
Framingham . . .	A. Luchini & Son . . .	1 15	-	3 00	25 00	-	16	-	-
Gill . . .	A. Pallato . . .	1 00	1 00	2 50	20 00	-	-	-	-
Hardwick . . .	Lane Construction Cor- poration.	1 00	-	5 00	20 00	-	-	17	-
Hingham . . .	W. H. Connor & Sons Company.	1 00	1 00	5 00	-	-	-	-	-
Holbrook . . .	Powers Brothers . . .	1 25	1 25	2 50	16 00	-	16	-	-
Holden . . .	G. E. Greenough . . .	1 20	-	2 00	15 00	-	16	-	-
Lanesborough-New Ash- ford-Williamstown.	Rendle-Stoddard . . .	-	1 25	6 00	-	-	-	-	-
Leicester . . .	C. E. Horne . . .	1 50	-	6 00	25 00	-	-	-	14 50
Littleton . . .	T. J. McCue . . .	1 40	90	4 50	18 00	-	14¾	-	-
Littleton . . .	T. J. McCue . . .	1 50	-	4 00	20 00	-	15¾	-	-
Lynnfield . . .	Hanscom Construction Company.	95	-	5 00	20 00	-	15	-	-
Marblehead-Swamp- scott.	McDonough . . .	1 25	-	2 00	-	-	17	-	-



## CONSTRUCTION IN 1921.

BROKEN STONE.		PIPE CULVERTS (LINEAL FOOT).																	
Local (Ton).	Trap (Ton).	CLAY.			CORRUGATED IRON.				Fencing (Lineal Foot).	Stone Filling (Cubic Yard).	Bounds (Each).	Catch Basins (Each).	Reinforced Concrete Ma-sonry (Cubic Yard).	Gravel Borrow (Cubic Yard).					
		Ten-inch.	Twelve-inch.	Fifteen-inch.	Twelve-inch.	Fourteen-inch.	Sixteen-inch.	Eighteen-inch.											
-	-	-	-	-	-	-	-	-	-	-	-	-	\$39 00	\$2 00					
\$2 70	-	-	-	-	\$1 50	-	-	-	-	-	-	\$90 00	30 00	1 20					
-	\$3 90	-	\$1 75	-	4 00	-	-	-	-	-	-	-	-	1 50					
-	5 30	-	-	-	2 00	-	\$2 50	\$3 00	\$0 90	\$2 25	\$5 00	-	35 00	2 00					
-	-	-	-	-	2 00	-	-	2 50	-	1 75	-	-	20 00	-					
-	-	-	-	-	-	-	-	-	75	-	-	-	35 00	-					
-	3 70	-	1 25	-	3 25	-	-	7 00	65	2 75	4 00	-	30 00	1 50					
-	3 50	\$1 75	2 00	-	-	-	-	-	-	3 00	3 00	100 00	30 00	1 25					
2 25	-	-	90	\$1 50	-	-	-	-	-	-	5 00	30 00	-	1 20					
-	-	-	-	-	4 00	-	-	-	70	-	5 00	-	35 00	1 20					
-	-	-	2 00	-	-	-	-	-	1 50	-	-	-	-	1 50					
-	-	95	1 15	1 50	-	-	-	-	-	2 75	-	70 00	-	1 75					
4 20	5 35	1 50	2 00	-	-	-	-	-	75	-	-	75 00	-	1 35					
2 95	-	-	1 65	1 95	-	-	-	-	-	-	-	75 00	-	1 20					
-	2 50	1 50	2 00	2 50	-	-	-	3 25	40	-	5 00	65 00	17 00	90					
3 25	-	-	1 75	-	-	-	-	-	80	-	-	-	-	1 80					
-	-	-	-	-	-	-	-	-	1 00	-	-	-	18 55	1 15					
-	-	-	2 75	-	-	-	-	-	1 00	-	-	-	-	-					
-	5 00	-	-	-	-	-	-	-	1 20	3 75	-	-	40 00	2 50					
-	4 25	1 25	1 50	-	2 00	-	-	2 50	75	2 40	4 00	50 00	20 00	1 10					
3 80	-	-	2 00	-	-	-	-	-	-	-	-	80 00	-	1 35					
-	-	-	-	-	2 50	-	-	3 50	50	1 60	-	-	25 00	1 30					
-	-	1 60	1 75	-	4 00	-	5 00	-	75	2 15	-	-	-	1 25					
-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 50					
2 60	-	1 50	-	-	-	-	-	-	70	-	-	65 00	20 00	1 25					
2 50	-	-	-	-	1 50	-	-	1 75	-	2 20	-	75 00	20 00	1 20					
-	-	-	-	-	-	-	-	-	1 00	-	-	-	23 00	2 50					
4 00	-	-	1 50	-	4 00	-	-	-	-	2 00	5 00	-	35 00	2 00					
2 20	3 40	-	-	-	-	-	-	-	65	-	4 00	-	22 00	1 15					
2 60	3 50	-	1 50	-	4 00	-	-	6 20	65	-	4 00	75 00	23 00	1 25					
2 60	-	-	1 35	1 60	-	-	-	-	70	-	3 00	75 00	25 00	1 15					
-	-	-	-	-	-	-	-	-	-	-	-	100 00	-	1 60					

## CONTRACT PRICES ON STATE HIGHWAY

TOWN OR CITY.	Contractor.	EXCAVATION.			Plain Concrete Masonry (Cubic Yard).	BITUMINOUS SURFACING.			Concrete Surfacing (Cubic Yard).
		Earth (Cubic Yard).	Borrow (Cubic Yard).	Ledge (Cubic Yard).		Bituminous Con- crete (Ton).	Asphalt (Gallon).	Tar (Gallon).	
Mendon-Uxbridge .	J. H. Fannon .	\$1 25	-	\$6 00	\$25 00	-	-	\$0 18	\$13 00
Middlefield-Peru .	C. Bianchi & Co. .	95	\$1 00	2 00	20 00	-	-	-	-
Middleton-Danvers .	F. E. Ellis .	1 15	-	3 00	25 00	-	\$0 17	-	-
Millbury .	Carlo Bianchi & Co. .	1 15	-	5 00	20 00	-	-	-	12 50
Monterey .	Hoyt Construction Com- pany.	1 10	1 00	7 00	20 00	-	-	-	-
North Adams .	F. T. Ley & Co. .	1 25	-	5 00	15 00	-	-	-	10 80
Norton .	Z. L. Canedy .	1 25	1 80	5 00	20 00	-	22	-	-
Norwell .	J. W. O'Connell .	1 50	1 25	-	-	-	16	-	-
Oxford .	D'Onfro Brothers .	90	2 00	5 00	20 00	-	-	-	-
Palmer .	W. C. Tannatt, Jr. .	1 50	1 80	4 00	30 00	-	-	-	15 33
Pembroke .	Atwood Thomas Company	90	1 25	4 50	20 00	\$7 00	-	-	-
Plainfield-Cummington	Geo. T. Seabury, Inc. .	1 00	90	3 00	20 00	-	-	-	-
Plympton .	M. F. Roach .	90	-	4 50	18 00	7 45	-	-	-
Quincy .	A. G. Tomasello .	1 35	-	5 00	20 00	-	-	-	14 00
Rutland .	A. Palladino .	1 20	-	5 00	15 00	-	-	-	-
Seekonk .	Germain & Staples .	1 10	-	10 00	-	-	16	-	-
Sterling .	Geo. E. Greenough .	1 50	-	-	15 00	-	-	-	-
Stoughton .	Carlo Bianchi & Co. .	1 50	-	6 00	25 00	-	20	-	12 00
Stoughton .	Cavanaugh Brothers	1 00	-	6 00	-	-	17	-	-
Upton .	R. H. Newell .	1 20	1 50	8 50	30 00	-	-	-	-
Waltham .	S. O. Hoyt .	1 15	-	5 00	20 00	-	17	-	-
Washington .	Luigi Carchia Company .	2 00	-	6 00	30 00	-	25	-	-
Watertown .	T. J. McCue .	1 45	-	5 00	-	-	16	-	-
Westborough .	G. E. Greenough .	1 20	-	2 00	25 00	-	-	25	-
West Bridgewater .	M. F. Roach .	1 10	-	-	20 00	9 00	-	-	-
West Springfield .	Hoyt Construction Com- pany.	1 35	-	-	15 00	-	-	18½	10 75
Winchendon-Templeton	Lane Construction Cor- poration.	1 10	1 00	3 00	20 00	-	-	14	-
Winchester-Woburn .	Powers Brothers .	1 10	-	2 50	20 00	-	15½	-	-
Woburn .	B. E. Savage .	-	-	-	25 00	-	-	-	-
Wrentham .	Canedy Construction Com- pany.	1 00	-	4 00	12 50	-	16½	-	-

CONSTRUCTION IN 1921 — *Concluded.*

BROKEN STONE.		PIPE CULVERTS (LINEAL FOOT).							Fencing (Lineal Foot).	Stone Filling (Cubic Yard).	Bounds (Each).	Catch Basins (Each).	Reinforced Concrete Ma-sonry (Cubic Yard).	Gravel Borrow (Cubic Yard).
Local (Ton).	Trap (Ton).	CLAY.			CORRUGATED IRON.									
		Ten-inch.	Twelve-inch.	Fifteen-inch.	Twelve-inch.	Fourteen-inch.	Sixteen-inch.	Eighteen-inch.						
-	\$3 25	\$1 50	-	-	\$4 00	-	\$6 50	\$8 00	\$0 80	\$3 00	\$3 00	\$100 00	\$30 00	\$1 50
-	-	-	-	-	2 00	-	-	3 00	-	1 95	-	-	25 00	2 00
-	2 90	-	\$1 70	-	-	-	-	-	80	-	5 00	75 00	36 00	1 20
-	-	1 25	1 50	\$1 80	-	-	-	-	65	+	-	125 00	-	1 25
-	-	-	-	-	2 70	-	-	3 25	-	2 15	-	-	25 00	1 15
-	-	-	-	-	3 20	-	4 90	5 85	90	-	-	-	18 00	1 05
-	5 00	-	-	-	3 25	\$3 50	-	-	75	-	-	75 00	30 00	2 00
\$3 25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	75	3 00	5 00	-	30 00	1 50
-	-	-	-	-	-	-	-	-	75	6 00	-	-	40 00	1 80
3 25	-	-	1 45	1 85	-	-	-	-	65	-	-	70 00	-	-
-	-	-	1 90	2 15	2 00	-	2 40	2 65	-	1 75	-	-	-	90
-	-	-	-	-	1 60	-	-	-	60	-	-	-	-	1 40
-	-	-	-	-	-	-	-	-	75	-	5 00	75 00	30 00	1 50
-	-	-	-	-	2 00	-	-	3 00	-	2 50	-	-	-	1 30
3 20	-	-	-	-	-	-	-	-	-	-	-	65 00	-	1 75
-	-	-	-	-	2 00	-	-	-	-	2 50	5 00	-	-	1 20
3 75	-	-	-	-	-	-	-	-	75	-	-	100 00	30 00	1 20
2 50	3 90	1 10	1 45	1 60	-	-	-	-	-	-	-	80 00	-	1 10
2 90	-	2 00	2 20	-	-	-	-	-	1 00	-	2 50	90 00	35 00	-
-	3 80	-	2 30	2 90	-	-	-	-	75	2 50	5 00	68 80	25 00	1 75
3 50	4 00	-	-	-	2 25	-	2 60	3 00	60	3 50	5 00	-	40 00	3 00
-	3 10	-	-	-	-	-	-	-	-	-	-	85 00	-	1 30
-	5 00	2 00	2 00	-	-	-	-	-	80	2 50	-	100 00	35 00	2 00
3 25	-	-	1 50	-	-	-	-	-	-	-	-	70 00	-	-
3 25	-	-	1 75	-	1 50	-	-	-	75	-	-	75 00	-	1 50
-	3 75	-	1 75	-	4 00	-	5 00	-	75	3 75	4 00	100 00	35 00	1 50
-	2 85	-	1 60	2 15	5 00	-	-	-	85	-	-	75 00	30 00	1 25
-	-	-	-	-	-	-	-	-	-	-	-	-	24 00	2 00
-	-	1 75	2 00	-	-	-	-	-	75	-	-	60 00	-	1 15



## CARE OF SHADE TREES ON STATE HIGHWAYS.

*List of Towns and Cities in which Work has been done by the State Forester's Department in cleaning and spraying Trees on State Highways for suppressing Gypsy and Brown-tail Moths and Elm-leaf Beetles, and the Amount expended in Each Municipality during the year.*

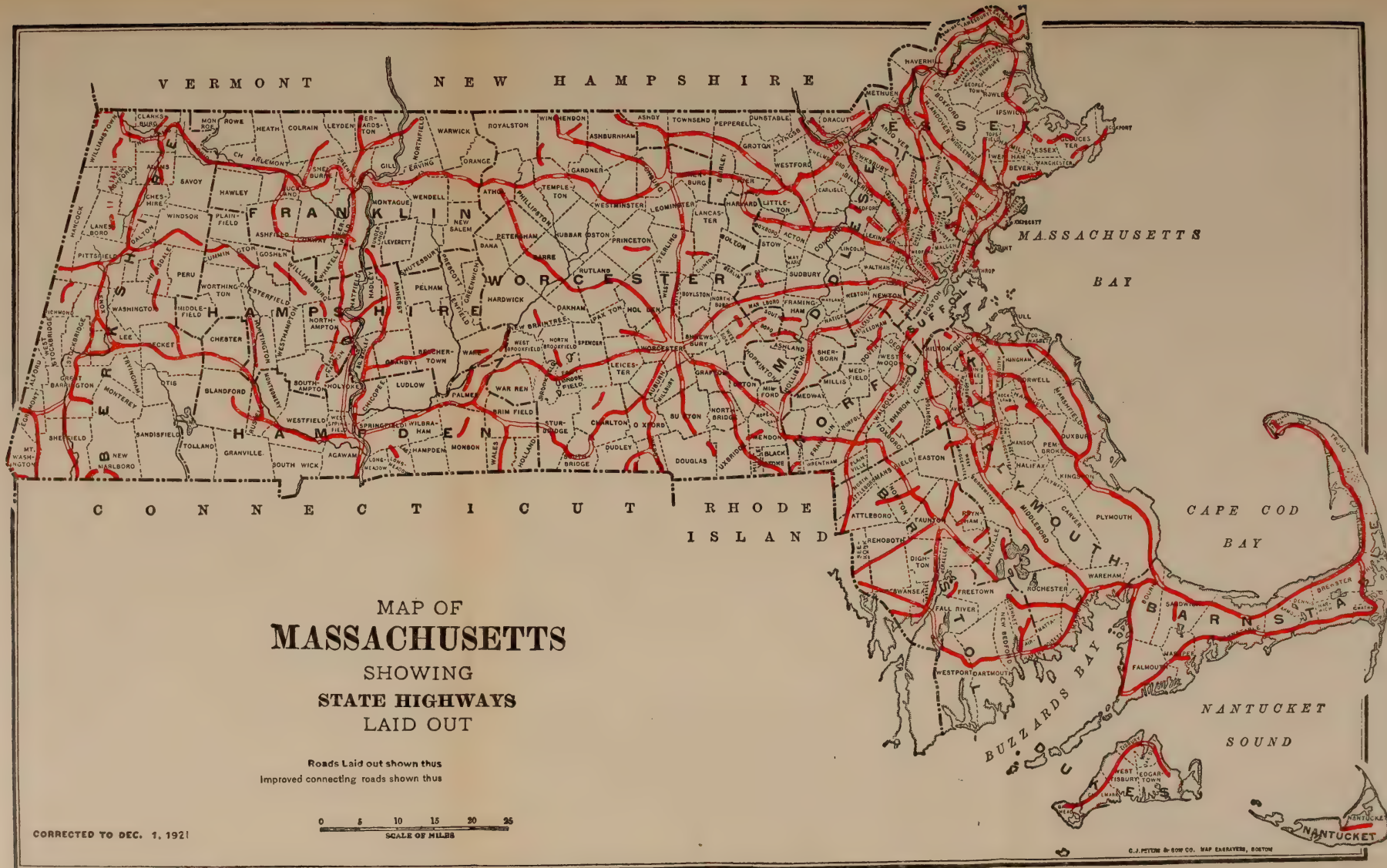
TOWN.	Amount.	TOWN.	Amount.
Abington . . . . .	\$75 81	Duxbury . . . . .	\$165 11
Acton . . . . .	181 81	East Bridgewater . . . . .	67 34
Amesbury . . . . .	56 28	Eastham . . . . .	35 20
Andover . . . . .	110 10	Essex . . . . .	24 39
Ashby . . . . .	128 67	Falmouth . . . . .	544 59
Ashburnham . . . . .	123 60	Fitchburg . . . . .	90 70
Ashland . . . . .	70 45	Foxborough . . . . .	77 10
Attleboro . . . . .	55 00	Framingham . . . . .	194 96
Avon . . . . .	11 50	Franklin . . . . .	55 00
Ayer . . . . .	77 53	Freetown . . . . .	101 00
Barnstable . . . . .	306 82	Gloucester . . . . .	51 89
Bedford . . . . .	66 90	Grafton . . . . .	85 75
Bellingham . . . . .	27 50	Groton . . . . .	77 61
Berkley . . . . .	55 00	Groveland . . . . .	66 52
Beverly . . . . .	118 73	Hamilton . . . . .	94 89
Billerica . . . . .	98 75	Hanover . . . . .	110 00
Blackstone . . . . .	13 88	Harvard . . . . .	60 30
Bourne . . . . .	253 13	Harwich . . . . .	106 40
Boxborough . . . . .	114 08	Haverhill . . . . .	201 75
Braintree . . . . .	226 56	Hingham . . . . .	59 74
Brewster . . . . .	67 55	Holbrook . . . . .	78 00
Bridgewater . . . . .	96 98	Holliston . . . . .	104 06
Burlington . . . . .	93 26	Hudson . . . . .	34 47
Canton . . . . .	110 00	Ipswich . . . . .	114 86
Chatham . . . . .	37 95	Kingston . . . . .	78 11
Chelmsford . . . . .	129 80	Lakeville . . . . .	155 81
Cohasset . . . . .	75 02	Lancaster . . . . .	22 00
Concord . . . . .	149 31	Leominster . . . . .	62 40
Danvers . . . . .	37 18	Lexington . . . . .	123 80
Dedham . . . . .	52 00	Lincoln . . . . .	78 57
Dennis . . . . .	75 00	Littleton . . . . .	97 23
Dighton . . . . .	156 00	Lowell . . . . .	89 67
Dover . . . . .	124 35	Lunenburg . . . . .	98 56
Dracut . . . . .	114 90	Mansfield . . . . .	55 00

*List of Towns and Cities in which Work, etc. — Concluded.*

TOWN.	Amount.	TOWN.	Amount.
Marlborough . . . . .	\$131 10	Seekonk . . . . .	\$92 00
Marshfield . . . . .	76 69	Shirley . . . . .	57 00
Mashpee . . . . .	150 00	Shrewsbury . . . . .	40 80
Melrose . . . . .	45 98	Somerset . . . . .	184 00
Merrimac . . . . .	38 95	Southborough . . . . .	98 08
Methuen . . . . .	122 00	Sterling . . . . .	105 00
Middleborough . . . . .	202 89	Stoneham . . . . .	90 75
Middleton . . . . .	22 60	Stoughton . . . . .	180 00
Millville . . . . .	13 86	Sudbury . . . . .	117 16
Milton . . . . .	11 50	Swansea . . . . .	202 00
Natick . . . . .	98 62	Taunton . . . . .	110 00
Needham . . . . .	79 46	Templeton . . . . .	20 12
Newbury . . . . .	74 96	Tewksbury . . . . .	116 70
Newburyport . . . . .	37 40	Townsend . . . . .	152 94
Norfolk . . . . .	37 20	Truro . . . . .	111 00
North Andover . . . . .	164 75	Tyngsborough . . . . .	154 00
North Attleborough . . . . .	101 00	Uxbridge . . . . .	13 86
Northborough . . . . .	173 22	Walpole . . . . .	174 00
North Reading . . . . .	83 00	Wareham . . . . .	220 28
Norton . . . . .	172 80	Wayland . . . . .	112 41
Norwell . . . . .	48 20	Wellfleet . . . . .	25 05
Norwood . . . . .	95 10	Wenham . . . . .	113 82
Orleans . . . . .	98 92	Westborough . . . . .	75 51
Pembroke . . . . .	218 05	West Boylston . . . . .	65 70
Pepperell . . . . .	89 74	West Bridgewater . . . . .	56 86
Plainville . . . . .	46 00	Westford . . . . .	158 40
Plymouth . . . . .	402 64	Westminster . . . . .	74 49
Princeton . . . . .	12 50	West Newbury . . . . .	116 70
Randolph . . . . .	101 00	Weston . . . . .	110 72
Raynham . . . . .	55 00	Westwood . . . . .	27 50
Reading . . . . .	129 50	Weymouth . . . . .	153 60
Rehoboth . . . . .	184 00	Wilmington . . . . .	68 93
Rochester . . . . .	39 54	Winchendon . . . . .	44 50
Rockland . . . . .	14 89	Winchester . . . . .	78 60
Rockport . . . . .	13 18	Woburn . . . . .	233 90
Rowley . . . . .	106 35	Wrentham . . . . .	202 00
Salisbury . . . . .	170 65	Yarmouth . . . . .	121 30
Sandwich . . . . .	222 76	Total . . . . .	\$15,000 00
Scituate . . . . .	80 14		









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# REGISTRY OF MOTOR VEHICLES

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## REGISTRY OF MOTOR VEHICLES.

### MOTOR VEHICLE DEATHS, INJURIES, COLLISIONS.

During the year 1921 the campaign inaugurated early in 1920 to reduce accidents and make the highways of the Commonwealth safer for all who use them was carried on with unabated vigor both by the police throughout the Commonwealth and the Department. The result attained was striking, particularly with reference to the reduction in the number of persons injured.

In 1919 there were 16,287 persons injured, in 1920 there were 21,182 injured, while in 1921 there were only 11,487 persons injured, notwithstanding the fact that there were 111,909 more automobiles on the highways of the Commonwealth than in 1919, and 53,016 more than there were in 1920.

The principal reason for this great reduction was without question the new regulation put into effect by the registrar on Dec. 1, 1920, making it necessary for every one to pass an examination before an original license was issued to him.

A close study of the following tables will indicate the great improvement that has taken place on the highways during the past two years:—

NUMBER OF PERSONS KILLED AND INJURED.

	KILLED.		INJURED.	
	1920.	1921.	1920.	1921.
Pedestrians, by autos . . . . .	314	339	7,664	6,484
Pedestrians, by motor cycles . . . .	2	2	67	40
Occupants of autos . . . . .	114	159	11,055	3,744
Motor cycle riders . . . . .	28	28	870	424
Bicycle riders . . . . .	12	14	868	594
Occupants of carriages . . . . .	1	—	344	173
Persons near street cars . . . . .	10	2	218	28
Totals . . . . .	481	544	21,086	11,487

CHILDREN KILLED AND INJURED IN 1920 AND 1921.

	1920.	1921.
Killed:		
Boys . . . . .	190	139
Girls . . . . .		57
		196
Injured:		
Boys . . . . .	2,101	2,446
Girls . . . . .		987
		3,433

NUMBER OF COLLISIONS.

	1920.	1921.
Autos v. pedestrians . . . . .	7,049	6,895
Autos v. autos . . . . .	12,297	12,508
Autos v. carriages . . . . .	639	743
Autos v. bicycles . . . . .	850	793
Autos v. trolley cars . . . . .	790	783
Autos v. poles, etc. . . . .	1,338	1,631
Autos v. trains . . . . .	39	64
Autos v. motorcycles . . . . .	396	725
Motor cycles v. pedestrians . . . . .	69	59
Totals . . . . .	23,467	24,201
In the daytime . . . . .	19,105	18,616
After dark . . . . .	4,362	5,585
Totals . . . . .	23,467	24,201

NUMBER OF SUSPENSIONS AND REVOCATIONS FOR 1920  
AND 1921.

The statements following show the action taken by the registrar, and the causes therefor:—



## ANALYSIS OF SUSPENSIONS AND REVOCATIONS.

	1920.	1921.
Licenses suspended . . . . .	1,270	1,940
Licenses revoked . . . . .	1,172	1,119
Rights suspended . . . . .	349	629
Registration certificates suspended . . . . .	82	75
Registration certificates revoked . . . . .	67	565
Registration certificates and licenses suspended . . . . .	—	36
Registration certificates and licenses revoked . . . . .	—	483
Registration certificates revoked and rights suspended . . . . .	—	47
Rights to have car operated in Massachusetts suspended . . . . .	—	5
Registration certificates canceled . . . . .	2	—
Licenses canceled . . . . .	2	—
Totals . . . . .	2,944	4,899
Resulting from investigations . . . . .	1,242	2,340
Resulting from court convictions . . . . .	1,694	2,452
Resulting from formal complaints . . . . .	8	1
Resulting from police complaints . . . . .	—	106
Totals . . . . .	2,944	4,899

## NUMBER OF SUSPENSIONS AND REVOCATIONS, FISCAL YEARS 1920 AND 1921.

DATE.	1920.			DATE.	1921.		
	Liquor.	Other Causes.	Total.		Liquor.	Other Causes.	Total.
<b>1919.</b>				<b>1920.</b>			
December . . . . .	42	80	122	December . . . . .	103	229	332
<b>1920.</b>				<b>1921.</b>			
January . . . . .	28	84	112	January . . . . .	56	142	198
February . . . . .	12	32	44	February . . . . .	40	95	135
March . . . . .	9	31	40	March . . . . .	75	140	215
April . . . . .	31	58	89	April . . . . .	94	161	255
May . . . . .	46	104	150	May . . . . .	101	165	266
June . . . . .	69	208	277	June . . . . .	129	319	448
July . . . . .	100	237	337	July . . . . .	147	367	514
August . . . . .	119	231	350	August . . . . .	176	375	551
September . . . . .	134	290	424	September . . . . .	153	476	629
October . . . . .	132	317	449	October . . . . .	193	584	777
November . . . . .	166	384	550	November . . . . .	145	434	579
Totals . . . . .	888	2,056	2,944	Totals . . . . .	1,412	3,487	4,899

NUMBER OF SUSPENSIONS AND REVOCATIONS ACCORDING TO NATURE OF  
OFFENCES.

	1920.	1921.
Liquor cases . . . . .	888	1,412
Improper person (liquor) . . . . .	-	96
Improper operating . . . . .	323	706
Improper person . . . . .	449	541
Death cases . . . . .	411	516
Reckless and endangering lives . . . . .	406	438
Improper equipment . . . . .	-	367
Overspeeding twice . . . . .	105	272
Overspeeding three times . . . . .	11	23
Taking car without authority . . . . .	70	172
Going away after accident . . . . .	96	124
For several violations . . . . .	-	14
Miscellaneous offences . . . . .	185	218
Totals . . . . .	2,944	4,899

COMPARATIVE STATEMENT OF REGISTRATIONS, DEATHS, ACCIDENTS,  
SUSPENSIONS, ETC.

YEAR.	Autos registered.	Motor cycles registered.	Total Registrations.	Number of Persons killed.	Number of Persons injured.	Ratio of Deaths to Registrations.	Ratio of Injuries to Registrations.	Licenses suspended.	Licenses revoked.	Rights suspended.
1908 . . . . .	18,066	1,922	19,988	13	486	.00065	.02431	51	44	-
1909 . . . . .	23,971	2,394	26,365	54	989	.00205	.03751	132	68	-
1910 . . . . .	31,360	3,358	34,718	77	963	.00222	.02774	198	90	-
1911 . . . . .	38,907	3,658	42,565	110	1,248	.00258	.02932	254	95	-
1912 . . . . .	50,132	5,034	55,166	142	1,962	.00257	.03557	325	190	-
1913 . . . . .	62,660	7,127	69,787	188	2,923	.00269	.04188	365	198	-
1914 . . . . .	77,246	8,161	85,407	229	4,010	.00268	.04695	521	231	34
1915 . . . . .	102,633	9,520	112,153	294	6,197	.00262	.05525	615	303	181
1916 . . . . .	136,809	10,713	147,522	315	9,131	.00214	.06190	641	514	232
1917 . . . . .	174,274	11,065	185,339	438	7,282	.00236	.03929	794	717	300
1918 . . . . .	193,497	12,862	206,359	499	8,598	.00242	.04166	957	811	398
1919 . . . . .	247,183	13,698	260,881	582	16,287	.00223	.06243	1,013	856	264
1920 . . . . .	304,631	15,143	319,774	481	21,182	.00150	.06624	1,270	1,172	346
1921 . . . . .	360,732	12,058	372,790	544	11,487	.00145	.03081	1,940	1,119	629

The preceding statement shows that the number of motor vehicles has increased greatly since the period covered by the preceding report. On the other hand, the number of persons killed and the number of persons injured shows in the year 1921 very little increase over the year 1918, the figures for persons killed being 544 as against 499 in 1918, and the number of persons injured being 11,487 as against 8,598 in 1918. In the year 1919, however, the number of persons killed reached the number of 582, and in 1920 the number of persons injured reached the very alarming figure of 21,182. It is probable that the decrease noted has been due in part to better police protection and in no small measure to the activity of the registrar with regard to the suspension and revocation of licenses and rights. A year or two more of experience should show whether a further improvement will be realized.

The statement also indicates the ratio of the number of persons killed and injured to the number of motor vehicles registered. These figures indicate a great proportional improvement in the situation, the ratio of persons killed to the total number of motor vehicles registered having shrunk to .00145, the smallest figure since 1908, and the ratio of persons injured to the total number of motor vehicles registered having shrunk to .03081, the smallest figure since 1911. These tables indicate a very gratifying progress in dealing with a most dangerous situation during the past few years.

The following table gives a classification of those killed and injured for the years 1914 to 1921, inclusive, and shows that the greater proportion of the reduction in injuries has been in the case of occupants of automobiles. While satisfactory progress has been made, the number of casualties remains extremely large.



	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.
<i>Killed.</i>								
Pedestrians . . . . .	150	188	219	260	304	379	313	339
Occupants of automobiles . . .	56	84	68	128	136	160	114	160
Motor cycle riders . . . . .	18	15	15	33	28	25	28	29
Bicycle riders . . . . .	3	3	7	11	19	17	12	14
Occupants of carriages . . . . .	2	4	5	5	4	1	1	-
Street car passengers . . . . .	-	-	1	1	8	-	10	2
<i>Injured.</i>								
Pedestrians . . . . .	2,303	3,110	4,710	4,001	3,871	5,719	7,731	6,524
Occupants of automobiles . . . .	879	1,521	2,363	1,831	3,560	8,712	11,055	3,744
Motor cycle riders . . . . .	337	636	895	682	504	677	870	424
Bicycle riders . . . . .	256	497	613	524	428	622	868	594
Occupants of carriages . . . . .	217	421	521	223	192	541	344	173
Street car passengers . . . . .	18	12	29	21	43	10	218	28

#### CONFERENCE OF MOTOR VEHICLE ADMINISTRATORS.

On Sept. 23, 1921, representatives having charge of motor vehicle laws and registrations, etc., in the following States met at the invitation of the Tax Commission of the State of New York, in New York, to consider the question of guiding future legislation and administration of the motor vehicle laws so as to procure uniformity and reciprocity: Connecticut, Maryland, Massachusetts, New Jersey, New York, Pennsylvania and Rhode Island.

As a result of this meeting a permanent organization was effected, and the organization was named Conference of Motor Vehicle Administrators. The first meeting of the conference was held at New Jersey on Nov. 18, 1921. It is hoped that as a result of this conference it may be possible to get better reciprocal relations with the New England and other eastern States, so that motorists, having complied with the law in their own State, may travel for pleasure into other States without having to go through difficulties with the police and motor vehicle authorities. The conference will probably give first consideration to the non-resident laws and also to the headlight regulations.

## INVESTIGATIONS AND PROSECUTIONS BY INSPECTORS.

The following table furnishes a classification and summary of the work of the inspectors other than examination work, together with comparative figures for the preceding year: —

	1920.	1921.
Total reports received from inspectors . . . . .	1,522	3,360
Itemized as follows:		
Accidents, fatal . . . . .	480	554
Accidents, non-fatal . . . . .	316	385
Accidents, brief reports . . . . .	230	243
General reputation . . . . .	223	521
Miscellaneous . . . . .	273	1,657
Totals . . . . .	1,522	3,360
Prosecutions (all offences) . . . . .	76	221
Fines imposed . . . . .	\$1,993	\$5,845

COMPARISON OF ABSTRACTS OF COURT RECORDS, FISCAL YEARS 1920  
AND 1921.

	1920.	1921.
Number of courts that have forwarded abstracts . . . . .	94	94
Number of abstracts received . . . . .	29,056	30,714
<i>Disposition of Cases.</i>		
Persons guilty of operating unlawfully . . . . .	19,086	21,687
Persons not guilty of operating unlawfully . . . . .	704	991
Cases appealed to a higher court . . . . .	1,093	1,391
Complaints placed on file . . . . .	5,710	7,140
Complaints nol-prossed . . . . .	182	737
Probation . . . . .	332	365
Persons committed to imprisonment . . . . .	331	503
Defendants defaulted . . . . .	46	26

COMPARISON OF ABSTRACTS OF COURT RECORDS, FISCAL YEARS 1920  
AND 1921 — *Concluded.*

	1920.	1921.
<i>Offences.</i>		
For overspeeding . . . . .	6,593	7,247
For reckless operating . . . . .	192	268
For operating while intoxicated . . . . .	992	1,821
For using automobile without authority . . . . .	164	286
For endangering lives and safety of the public . . . . .	419	610
For failing to stop after causing injury . . . . .	156	266
For operating without a license . . . . .	2,321	2,746
For operating without carrying registration certificates . . . . .	1,347	1,551
For operating an unregistered motor vehicle . . . . .	406	325
For improper display or no register number . . . . .	536	409
For refusing to stop when signaled by officer . . . . .	589	531
For operating with unlighted lamps . . . . .	1,549	1,681
For failing to give signal when approaching intersecting way . . . . .	3,163	2,738
For operating with dazzling lights . . . . .	148	230
For operating within 8 feet of street car . . . . .	318	472
For violating metropolitan park rules . . . . .	423	664
For miscellaneous offences . . . . .	2,612	2,576
For operating after license suspended or revoked . . . . .	43	102
For larceny of motor vehicles . . . . .	53	196
For manslaughter . . . . .	34	134
Lenses not approved . . . . .	—	30

## FINES PAID, AS REPORTED BY STATE AUDITOR.

	1920.	1921.
For violations of the motor vehicle law . . . . .	\$146,453 04	\$208,173 27

## EXAMINATIONS FOR LICENSES.

Examinations of applicants for licenses to operate motor vehicles are now held in 57 cities and towns in the Commonwealth. At some of these points examinations are conducted daily, at other places weekly or fortnightly, depending on the season of the year, and as warranted by the number of applicants.



The list of examination places follows: —

Athol	Hingham	Norwood
Attleboro	Holyoke	Oak Bluffs
Ayer	Hyannis	Palmer
Boston	Ipswich	Pittsfield
Bridgewater	Lawrence	Plymouth
Brockton	Lowell	Provincetown
Cambridge	Lynn	Quincy
Clinton	Malden	Rockland
Concord	Mansfield	Salem
Fall River	Marlborough	Southbridge
Falmouth	Middleborough	Springfield
Fitchburg	Milford	Taunton
Framingham	Nantucket	Ware
Franklin	New Bedford	Wareham
Gardner	Newburyport	Webster
Gloucester	Newton (West)	Westfield
Great Barrington	North Adams	Whitinsville
Greenfield	Northampton	Woburn
Haverhill	North Brookfield	Worcester

The inspectors of this section of the Department during the fiscal year 1921 conducted 94,023 examinations of private operators and chauffeurs.

The following statement gives some indication of the work of the examiners. It should be noted that the percentage of operators who failed was 26.6 per cent, while the percentage of chauffeurs failing was only 13.3 per cent.

	1919.	1920.	1921.
Total examinations . . . . .	19,107	39,845	94,023
Chauffeurs examined . . . . .	18,882	37,444	46,506
Chauffeurs unfit . . . . .	3,499	4,510	5,485
Operators examined . . . . .	225	2,401	46,136
Operators unfit . . . . .	66	403	9,716
"Competency," passed . . . . .	—	83	137
"Competency," unfit . . . . .	—	45	23

## HEADLIGHTING.

On May 26, 1921, an act passed by the Legislature, with an emergency preamble attached, required the use on all motor vehicle headlamps of a lens or other device approved by the registrar, designed to prevent glaring rays. Under the provisions of this act, 57 lenses and devices were submitted to a laboratory test under specifications formulated by this Department. These specifications were a great improvement over those under which devices were tested in other States having similar laws, and but 33 of the 57 devices submitted were successful in complying with the requirements.

While the improvement in the specifications for laboratory test adopted by Massachusetts was in advance of any specifications previously used, it was not expected that the results would be perfection, for the solution of this problem is still in its development stages. However, with State-wide publicity and education, through the distribution of proper literature and otherwise, the results attained were so much better than those attained in other States having similar laws that the committee on motor vehicle lighting of the Illuminating Engineering Society, which is composed of the greatest experts on this subject, has recently revised its specifications along lines similar to those of the Massachusetts specifications with but a few minor improvements.

## PERSONNEL OF THE EXAMINING AND INVESTIGATING SECTION.

The personnel of this section has undergone some change, several inspectors having left the service, while thirty-three new men have been taken on. The section now consists of the chief and fifty-nine inspectors.

## USED-CAR SECTION.

This section lists the sales of used cars and also keeps an index of cars that have been reported as stolen. The number of cars reported to this office as stolen in 1921, namely, 7,390, as the total, represents cars that were stolen in different parts of the country, such as, New York, Chicago, Pennsylvania, California, etc.

The following cars stolen outside of this State have been recovered through information furnished by this office: four cars stolen in Providence, R. I., two in New York, one in Brooklyn, one in Bronx, N. Y., one in Randolph, Vt., one in Manchester, N. H., one in Springfield, Vt., one in Pennsylvania, one in Newport and one in Montreal.

The following cars stolen in Massachusetts have been recovered outside of the State through information furnished this office: one in California, one in Florida, one in Albany, N. Y., one in Stratham, N. H., one in Philadelphia, one in Quebec, one in Montpelier, Vt., one in Providence, R. I., one in Essex Jct., Vt., one in Augusta, Me., one in Swanton, Vt., and one in Jacksonville, Fla.

The following figures show somewhat the volume of work handled by the used-car section: —

	1920.	1921.
Dealers:		
Total number making reports to this office . . . . .	1,626	1,681
Total number of first-class dealers reporting . . . . .	805	1,033
Total number of second and third class dealers reporting . . . . .	821	648
Reports:		
Approximate number of individual reports received daily . . . . .	150	175
Approximate number of dealers' reports received daily . . . . .	150	250
Motor vehicles stolen:		
Number of stolen motor vehicles reported to this office . . . . .	5,000	7,390
Number of cars stolen in Boston . . . . .	480	490
Number of cars recovered through this office . . . . .	190	339
Engine numbers assigned:		
Engine numbers assigned to cars . . . . .	139	550
Letters authorizing replacing of engine numbers . . . . .	25	50

### REGISTRATIONS, LICENSES, FEES.

The registrations for 1921 showed an increase of about 20 per cent over the preceding year, with the exception of a decrease in the number of motor cycles registered, and the increase for five years is clearly shown in the following table: —



## PASSENGER CARS, COMMERCIAL VEHICLES AND MOTOR CYCLES.

	1916.	1917.	1918.	1919.	1920.	1921.	Per Cent Increase, Five Years.
Passenger cars . . .	118,615	145,801	160,486	205,372	251,570	305,471	158
Commercial cars . . .	18,194	25,505	33,011	41,810	52,968	55,261	205
Motor cycles . . .	10,713	10,956	12,862	13,698	15,142	12,048	11

The fees received for the year 1921, together with the number of vehicles registered in each classification and the number of licenses granted, etc., are shown in the following table:—

## ANALYSIS OF RECEIPTS.

## Certificates of registration:

Passenger cars . . . . .	305,471	\$2,827,854 50
Commercial cars . . . . .	55,261	788,439 50
Trailers . . . . .	472	7,419 50
Motor cycles . . . . .	12,048	56,637 00
Motor cycle dealers . . . . .	51	510 00
Manufacturers or dealers . . . . .	1,848	45,700 00
Manufacturers or dealers, additional cars . . . . .	2,848	18,384 50
Repairers . . . . .	280	2,745 00

## Licenses to operate:

Operators . . . . .	36,420 at \$2 00	72,840 00
Chauffeurs . . . . .	41,021 at 2 00	82,042 00
Operators' renewals . . . . .	211,349 at 2 00	422,698 00
Chauffeurs' renewals . . . . .	91,729 at 2 00	183,458 00
Examinations . . . . .	93,501 at 2 00	187,002 00

## Copies of certificates and licenses furnished . . . . .

nished . . . . .	17,337 at	50	8,668 50
Duplicate automobile number plates . . . . .	7,552 at	75	5,664 00
Duplicate motor cycle number plates . . . . .	197 at	50	98 50
State plates furnished . . . . .	790 at	10	79 00
Lens fees . . . . .	53 at	50 00	2,650 00

Total . . . . .	\$4,712,890 00
Miscellaneous receipts . . . . .	920 38

Total fees . . . . .	\$4,713,810 38
Motor vehicle fees rebated (deducted) . . . . .	69,185 55

Net fees . . . . .	\$4,644,624 83
Court fines received by the Treasurer and Receiver-General . . . . .	208,173 27

Total receipts credited motor vehicle fees account . . . . .	\$4,852,798 10
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The cost of running the Registry of Motor Vehicles for the year 1921 was \$542,411.09, which was 11.67 per cent of the net fees collected, as compared with 11.27 per cent for the year 1920. This cost, deducted from the receipts of the year, left available for legislative appropriation for highway work the sum of \$4,310,387.01.

The following table gives an analysis of the expenditures for running the Registry for the year 1921: —

## EXPENDITURES FOR THE FISCAL YEAR 1921.

## Personal services:

Regular pay roll . . . . .	\$288,246 86	
Overtime . . . . .	11,698 37	
	<hr/>	\$299,945 23

## Supplies:

Books, maps, etc. . . . .	\$202 70	
Typewriter supplies (including carbon, \$1,086) . . . . .	1,617 33	
Adding machine supplies . . . . .	22 38	
Duplicator machine supplies . . . . .	168 56	
Other machine supplies . . . . .	39 60	
Stationery . . . . .	9,969 59	
Guide cards, folders, etc. . . . .	1,165 64	
Typewriter repairs . . . . .	373 96	
Multigraph repairs and supplies .. . . .	347 79	
Other repairs . . . . .	273 98	
	<hr/>	14,181 53

## Equipment:

Typewriter machines . . . . .	\$849 50	
Duplicator machines . . . . .	330 00	
Other machines . . . . .	554 25	
Visible index system . . . . .	3,285 09	
	<hr/>	5,018 84

## Furniture:

Desks and chairs . . . . .	\$427 84	
Filing cabinets . . . . .	3,783 13	
Other articles as listed below:		
Electric fans . . . . .	180 53	
Partitions, etc. . . . .	559 90	
	<hr/>	4,951 40

## Traveling expenses:

Employees . . . . .	\$25,429 81	
Automobiles (owned by employees) . . . . .	34,566 45	
Other traveling expenses . . . . .	2,082 72	
	<hr/>	\$62,078 98

## Other services and expenses:

Expressage . . . . .	\$279 68	
Postage . . . . .	40,269 60	
Printing . . . . .	26,243 31	
Telephone . . . . .	343 99	
Premium on bonds of employees . . . . .	122 50	
Rent . . . . .	3,466 34	
Special services (labor) . . . . .	1,476 68	
Other services as listed below:		
Advertising . . . . .	476 96	
Badges for inspectors . . . . .	170 00	
Cleaning and towels . . . . .	651 87	
Commissions as justices of the peace . . . . .	320 00	
Headlight tests . . . . .	2,120 00	
Headlight supplies . . . . .	810 33	
Light and water fixtures . . . . .	246 14	
Number plates . . . . .	78,588 67	
Sign painting . . . . .	183 96	
Uniforms for inspectors . . . . .	360 00	
Sundries . . . . .	105 08	
	<hr/>	156,235 11

Total . . . . . \$542,411 09

The total amount appropriated or available for 1921 was \$582,826.22.

The following comparative statement for the years 1920 and 1921 shows very plainly the increase of work as occasioned by increased registrations and licenses, etc.:—



	1920.	1921.
Passenger registrations . . . . .	251,570	305,471
Highest number plate assigned . . . . .	219,717	259,655
Commercial registrations . . . . .	52,968	55,261
Highest number plate assigned . . . . .	B49,572	B55,150
Motor cycle registrations . . . . .	15,142	12,048
Highest number plate assigned . . . . .	14,508	11,393
Motor cycle dealers' registrations . . . . .	43	51
Manufacturers' or dealers' registrations . . . . .	1,961	1,848
Licenses to operate:		
Operators . . . . .	75,304	36,420
Chauffeurs . . . . .	30,937	41,021
Operator renewals . . . . .	206,391	211,349
Chauffeur renewals . . . . .	48,907	91,729
Total licenses . . . . .	361,539	380,519
Examinations . . . . .	42,595	93,501
Copies of certificates and licenses issued . . . . .	14,703	17,337
Duplicate automobile number plates . . . . .	6,831	7,552
Duplicate motor cycle number plates . . . . .	409	197
Fees . . . . .	\$3,853,484 25	\$4,712,890 00
Miscellaneous receipts <sup>1</sup> . . . . .	6,747 45	920 38
Total fees . . . . .	\$3,860,231 70	\$4,713,810 38
Motor vehicle fees rebated (deducted) . . . . .	73,236 96	69,185 55
Net fees . . . . .	\$3,786,994 74	\$4,644,624 83
Court fines received by the Treasurer and Receiver-General . . . . .	146,453 04	208,173 27
Total receipts credited Motor Vehicle Fees Account . . . . .	\$3,933,448 78	\$4,852,798 10
Personal services . . . . .	\$249,375 83	\$299,945 23
Expenses . . . . .	177,444 05	242,465 86

<sup>1</sup> Interest amounting to \$4,290.67 included in miscellaneous receipts for 1920.

### AIRCRAFT.

Acting under the provisions of sections 35 to 43 of chapter 90 of the General Laws relating to aircraft, the registrar issued during the year ten airplane operator licenses, the fee in each case being \$5. Six certificates of registration for aircraft were also issued, the fee in each case being \$2, making the total fees received on account of aircraft and its operation \$62.

### RECOMMENDATIONS OF THE DEPARTMENT FOR LEGISLATION RELATING TO THE REGISTRY OF MOTOR VEHICLES.

See pages 103, 104 of this report.



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DIVISION OF WATERWAYS AND  
PUBLIC LANDS

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## DIVISION OF WATERWAYS AND PUBLIC LANDS.

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### BOSTON HARBOR.

#### THE COMMONWEALTH FLATS AT SOUTH BOSTON.

##### *Commonwealth Pier No. 5.*

Repairs have been necessary during the year, and an examination has been made of the transformers feeding the converters which furnish power to the electric switches. These were found in good condition.

Notice was received from the United States quarantine authorities that fenders or racks should be furnished to keep vessels at least 4 feet away from the side of the pier to prevent infected rats from escaping from vessels to the pier. Eight floating fenders 4 feet wide were bought from the William L. Miller Company at a cost of \$1,600. These are sufficient to breast off four vessels and keep them at least 4 feet away from the pier.

The platform and railings forming the lines used by the United States Immigration Inspectors were found filthy and in constant need of repair. When the pier was first built these railings were installed temporarily, with the intention of replacing them later with railings made of pipe. On account of their insanitary condition the old railings were removed and twenty-six pipe line fences built and placed in position by employees at the pier.

Because of trouble with the vacuum return system of the heating plant it was decided to investigate the matter of changing this system. The firm of Hollis French & Allen Hubbard, consulting engineers, was employed for this investigation and submitted a report recommending a change which would reduce the cost of operating the plant. The recom-

mendation was adopted and the necessary work done under an agreement with the Walworth, English-Flett Company to make this change at cost plus 15 per cent, at a price not to exceed \$2,400. This work was completed in November, 1921, at a cost of \$1,937.89. The system as changed has proved satisfactory.

In the fall of 1921 it was decided to move the Registry of Motor Vehicles from the State House to this pier. To accommodate the division properly, it was necessary to make a number of changes in the partitions and to install additional skylights. That this might be done as rapidly as possible agreements were made on Sept. 9, 1921, with the Holt-Fairchild Company to make the necessary changes at cost plus 5 per cent, and on Oct. 5, 1921, with John H. Pray & Sons Company to furnish and lay linoleum for the sum of \$2.45 per square yard.

The work under both these agreements was completed early in December, that of the Holt-Fairchild Company amounting to \$67,815.93, and the John H. Pray & Sons Company to \$7,183.10.

In connection with this work it was necessary to move the offices of the superintendent to the opposite side of the pier and to use another room for the records of the Department. All of this work is included in the cost stated.

#### *Commonwealth Pier No. 6.*

At the request of the Boston Fish Market Corporation, the Division decided to repave, with granite blocks, certain brick paving opposite the buildings on the pier, and to leave to a later date the repaving of the central street and the archways under the buildings. On July 28, 1921, a contract was made with the B. E. Grant Company to repave the portion of the brick paving not repaired in 1918 and 1919, and to relay the stone blocks in the archway at the entrance to the pier and on the westerly side of the refrigerator building. This work was completed on Sept. 27, 1921, at a cost of \$27,182.73. This leaves the repaving of the central street between the two main buildings and the archways under the buildings to be done at a later date.



*Development of Land South of Summer Street.*

No sales have been made in this area during the year.

The construction of Bullock Street from Fargo Street to Claflin Street, under contract with the B. E. Grant Company, dated July 19, 1920, was completed on Jan. 12, 1921, at an expense of \$55,985.73.

On Aug. 30, 1921, a contract was made with the B. E. Grant Company to construct a portion of Bullock Street from Claflin Street to Cypher Street and the northerly half of Cypher Street from C Street to D Street, to build a sewer with catch basins and pave the street with granite blocks. The work was practically completed at the end of the year at a cost of \$24,968.75. This provides a continuous paved street from Fargo Street to South Boston, except for the crossing of Claflin Street which the city of Boston is expected to build in 1922.

Under its agreement with the Commonwealth the city has laid out D Street from Fargo Street to Claflin Street, and has completed the sewer and laid a water pipe preparatory to paving the street next year.

*South Bay.*

Late in 1920 the New York, New Haven & Hartford Railroad Company planned to extend the railroad yards at South Boston to take care of the increased number of passenger cars required. This larger area could be secured only by extending the yard into South Bay. The matter was studied for some time by the engineers of the Division and by the United States Engineers. To both it appeared that the best use of the bay would be made by deepening the existing channel and filling the flats outside the channel.

It was accordingly decided to recommend to the Legislature a change in the harbor line in this bay to allow a channel 160 feet wide along the westerly side of the bay, with a turning basin at the upper end near the wharf of the Metropolitan Coal Company. By chapter 137 of the Acts of 1921 this change in the harbor line was made.

License was later issued to the New York, New Haven &

Hartford Railroad Company to fill to the new harbor line to build the yard needed for the operation of its passenger equipment. Much of the filling is to be done upon flats belonging to the Commonwealth, and a large amount of tidewater displacement will result from the work. With the approval of the Governor and Council an agreement was made with the New York, New Haven & Hartford Railroad Company to pay the charges for Commonwealth tide lands and for tidewater displacement by deeding to the Commonwealth a tract of land bordering on the channel at the head of the bay. This was taken at the valuation fixed by the assessors of the city of Boston. The rate of charge for tidewater land of the Commonwealth was fixed by the Governor and Council, and the rate for tidewater displacement was that charged under licenses previously granted for work in this vicinity. The filling authorized was begun at once and is now in progress.

#### THE COMMONWEALTH FLATS AT EAST BOSTON.

The report for 1920 referred to studies made during the year for the development of this property and to the need for a change in the harbor lines. A recommendation for the revision of these lines and their extension was made to the Legislature and subsequently embodied in chapter 111 of the Acts of 1921.

Request was then made to have the United States pierhead and bulkhead lines re-established to conform to these new harbor lines. After consideration and hearing this revision was approved with two modifications. On the southerly side along the main harbor front the line was advanced to give a continuous straight line from East Boston to the southeasterly corner of Governor's Island, and the central dock was increased in width from 1,000 to 1,200 feet. A revision of the harbor line to conform to the United States line was later recommended to the Legislature.

After appropriations were made for the extension of the work, a contract was made on May 11, 1921, with the William L. Miller Company to build about 2,500 feet of bulkhead on the northerly edge of the area to be filled. The work was completed Aug. 26, 1921, at a cost of \$56,157.08. This bulk-



head will prevent material used in filling from escaping to the flats of the city in the vicinity of Wood Island Park.

A contract was made May 11, 1921, with the Atlantic, Gulf & Pacific Company to dredge and place upon the area enclosed by this bulkhead 1,100,000 cubic yards of material. The material is to be dredged, first, to complete the excavation of the berth of the first dock to be built upon the harbor front, and second, to begin the dredging of the central basin to be used later as a rehandling basin. During the year 791,722 cubic yards were excavated at a cost of \$260,793.23. Work under this contract will probably be completed early next year, but provision has been made for its extension if funds become available.

Under this contract no material has been rehandled during the year, but dredging has been done to increase the berth and rehandling basin. A small amount of material has been dredged from other parts of the harbor and deposited within the area to be filled. This deposit will be continued until the new rehandling basins become available for the work.

As the work of filling progressed, it became necessary to begin the building of the bulkhead on the westerly and southerly sides of the central basin. On Sept. 14, 1921, a contract was made with the William L. Miller Company to build about 1,900 feet of bulkhead on the westerly and southerly sides of the central basin. This work is now nearly completed.

#### RAILROAD CONNECTIONS WITH THE COMMONWEALTH FLATS AT EAST BOSTON.

During the past few years studies have been made for the best location for a railroad connection from the Boston & Maine and Boston & Albany railroads to the Commonwealth flats at East Boston. The Commission on Waterways and Public Lands, in its report for 1919, recommended legislation to authorize the construction of rail connections between the State's property and the existing railroad system of the Commonwealth, and the taking, if necessary, of the location, tracks and trackage rights of the Boston, Revere Beach & Lynn Railroad Company. It also submitted to the Legislature a plan for constructing a railroad track through the Harbor View



section of East Boston, connecting with the Boston & Maine and Boston & Albany Railroad tracks and extending easterly to the Commonwealth flats east of Jeffries Point. This matter was considered by the Legislature of 1920, and as a result chapter 54 of the Resolves of 1920 provided for a special commission to consider the question of railroad connections between the Commonwealth flats and the existing railroad systems.

This Commission reported on March 8, 1921 (House No. 1331 of 1921), recommending the construction of a track from the yard of the Boston & Albany Railroad at East Boston easterly to the Commonwealth flats, crossing the Boston, Revere Beach & Lynn Railroad at grade.

After considering this report the Legislature passed chapter 494 of the Acts of 1921, which authorized the Department of Public Works, Division of Waterways and Public Lands, to acquire a right of way and construct a railroad from the Boston & Albany Railroad, near Prescott Street, easterly, and crossing the Boston, Revere Beach & Lynn Railroad at grade to the flats of the Commonwealth beyond Jeffries Point, with a provision that no trains on the new tracks shall be operated to cross the tracks of the Boston, Revere Beach & Lynn Railroad except between the hours of midnight and 6 o'clock in the morning.

Under authority of this act negotiations have been in progress and surveys have been made. It is expected that early next year a taking will be made and the track constructed in accordance with the provisions of chapter 494 of the Acts of 1921.

#### BATTERY WHARF DREDGING.

A contract was made on June 22, 1921, with the Bay State Dredging and Contracting Company to dredge to a depth of 30 feet at mean low water an area in Boston Harbor between the harbor line in front of Battery Wharf and the docks on both sides of said wharf and the main ship channel, and to dredge to a depth of 25 feet at mean low water the dock on the northerly side of Battery Wharf. The contract prices for the work were: for dredging between the harbor line and the main ship channel, 55 cents per cubic yard, scow measure-

ment; for dredging in the dock, 50 cents per cubic yard, scow measurement; for removing boulders, \$20 per cubic yard.

This dredging was completed Aug. 30, 1921, at a cost of \$13,859.35. Toward this cost a contribution of \$4,000 was made by the Quincy Market Cold Storage and Warehouse Company.

#### MYSTIC RIVER.

At the date of the report for 1920 the dredging of the channel in Mystic River near Malden bridge was completed except for a shoal about 30 feet wide over the pipe of the Boston Consolidated Gas Company. This shoal was left at the request of the company that the covering over the pipe be undisturbed until a new syphon could be built under the river to prevent any interference with the gas supply of the city. In August, 1921, the new pipe was in operation. On Oct. 14, 1921, the dredging of this shoal was completed by the Bay State Dredging and Contracting Company at a cost of \$1,200.

The only obstructions remaining in this channel are certain cables of the Boston Elevated Railway Company projecting a little more than a foot above the bottom of the channel. Negotiations for the removal of these cables are in progress.

#### OLD HARBOR DREDGING.

On Aug. 30, 1921, a contract was made with the Bay State Dredging and Contracting Company for dredging to a depth of 6 feet at mean low water the basin opposite the Mosquito Fleet Yacht Club House at Old Harbor. The contract prices for this work were: for dredging, 53 cents per cubic yard, scow measurement; for removing boulders, \$15 per cubic yard. This work was completed Oct. 14, 1921, at a cost of \$9,277.12.

#### WINTHROP HARBOR DREDGING.

The work of dredging in this harbor under contract of Sept. 10, 1920, with the Bay State Dredging and Contracting Company was completed March 26, 1921, at a cost of \$12,499.03. This work provided a basin between the United States government landing and the wharf of the Winthrop Yacht Club.



## COTTAGE PARK, WINTHROP.

On Feb. 10, 1921, hearing was held upon the petition of the Cottage Park Yacht Club for redredging by the Commonwealth of the channel and basin at Cottage Park, originally dredged in 1906 and 1907. A contract was made on Aug. 30, 1921, with the Bay State Dredging and Contracting Company for dredging to a depth of 6 feet at mean low water the channel and basin located southerly from the Cottage Park Yacht Club House. The contract prices for this work were: for dredging, 51 cents per cubic yard, scow measurement; for removing boulders, \$15 per cubic yard.

This work was completed Oct. 17, 1921, at a cost of \$11,851.38. Toward the cost a contribution of \$1,000 was made by the Cottage Park Yacht Club.

## WOLLASTON BEACH DREDGING.

On Feb. 10, 1921, hearing was held upon the petition of the Wollaston Yacht Club for dredging by the Commonwealth of basins and approach channels to its club house. A contract was made on Aug. 1, 1921, with W. S. Rendle for dredging to a depth of 8 feet at mean low water the basin between the Wollaston and Squantum Yacht clubs, the inner end of the approach channel, and the basin on the easterly side of the approach channel, 250 feet long and 120 feet wide. The contract prices for this work were: for dredging, 42.5 cents per cubic yard, scow measurement; for removing boulders, \$3 per cubic yard.

Work under this contract was completed Nov. 26, 1921, at a cost of \$15,045.35. Toward this cost a contribution of \$1,000 was made by the Wollaston Yacht Club and a contribution of \$2,000 by the city of Quincy.

## HAYWARDS CREEK.

The lease of May 12, 1920, by the Commonwealth to the Fore River Shipbuilding Corporation of certain land at Haywards Creek was assigned by the lessee on Feb. 15, 1921, to the Bethlehem Shipbuilding Corporation, Ltd., and the assignment assented to by the Division as required by the terms of the lease.



Plans and specifications for a State pier, in progress at the time of the 1920 report, were completed, and on Aug. 6, 1921, proposals were received for the construction of this pier. Alternate bids were requested for a pier 500 feet long and 190 feet wide of pile or solid construction. When these proposals were received, certain suggestions were made by the Bethlehem Shipbuilding Corporation, Ltd., and a request for some changes in the plans to allow better facilities for the construction of the second dry dock proposed by the corporation. Because of this request and the general uncertainty of commercial conditions this project has been held in abeyance.

## RIVERS, HARBORS, TIDEWATERS AND FORESHORES OUTSIDE OF BOSTON HARBOR.

Section 11 of chapter 91 of the General Laws provides: —

Outside of Boston Harbor, the division shall undertake such work for the improvement, development, maintenance and protection of rivers, harbors, tidewaters and foreshores as it deems reasonable and proper, and for this purpose shall have the same powers conferred upon it by section thirty-one. In selecting the places to do such work, the division shall consider the general public advantage of the proposed work, the local interest therein as manifested by municipal or other contributions therefor, the importance of the industrial or commercial and other interests to be especially served thereby, and any other material considerations affecting the feasibility, necessity or advantage of the proposed work or the expenditure therefor. No work authorized by this section shall be begun until after a public hearing has been held and a survey and an estimate of the cost has been made.

The policy outlined in this section has been followed since the passage of chapter 481 of the Acts of 1909. During 1921 an appropriation of \$250,000 was available for this work.

Petitions under this section have been filed during the year with the Division for surveys and improvements in the following localities: Cohasset Harbor, Cohasset; Gloucester Harbor, Gloucester; Herring River, Harwich; Hyannisport, Barnstable; Lake Anthony, Oak Bluffs; Little River, Gloucester; Mill River, Gloucester; Nobscusset Harbor, Dennis; Salters Point, Dartmouth; Sand Hills, Scituate; Scorton Creek, Sandwich; Wild Harbor, Falmouth; Witchmere Harbor, Harwich.

Except for the holding of public hearings, and the making of surveys and estimates of cost in some instances, no conclusive action as to allotments has been taken during the year for carrying into effect improvements under petitions relating to Cohasset Harbor, Cohasset; Little River, Gloucester; Mill River, Gloucester; Salters Point, Dartmouth; Scorton Creek, Sandwich.

For information relating to work accomplished in various harbors and rivers in the Commonwealth not specifically

described in this report, attention is called to the annual reports of the Board of Harbor and Land Commissioners, to the annual reports of the Commission on Waterways and Public Lands for the years 1916 to 1919, inclusive, to the report of the Department of Public Works for 1920, and to the tables in the Appendix, which show localities, character of work, appropriations, contributions and expenditures by the Commonwealth and certain appropriations and expenditures by the Federal government.

#### ACUSHNET RIVER.

The work of dredging a channel in this river, under contract of Aug. 2, 1920, with the Bay State Dredging and Contracting Company was completed Feb. 19, 1921, at a cost of \$112,180.54.

As a result of this dredging a channel has been provided 25 feet deep at mean low water, 350 feet wide at the connection with the turning basin, narrowing to a width of 90 feet at a point about 500 feet north of the basin and continuing at this width a distance of 4,200 feet northerly.

Amount expended during the year, \$42,802.43.

Total expenditure to Dec. 1, 1921, \$118,764.85.

#### ELLISVILLE HARBOR, PLYMOUTH.

During the year the harbor at Ellisville maintained itself despite heavy storms in the early winter. Damage to the dike by one of these storms was repaired and the dike rebuilt by local labor interested, without expense to the Commonwealth.

In February the need for a jetty on the north side of the channel and for riprap protection on the south side was brought to the attention of the Division. It was suggested that this work be done under the general direction of the Division by local labor, and that the expense of supervision be paid by residents interested.

It appeared to the Division that an improvement so largely of local benefit might well be carried on in this manner. Plans for the work were accordingly submitted and an allotment made for material and labor. Under these conditions about 150 feet of timber crib work jetty, weighted with stone, was built on



the north side of the channel and a small amount of riprap placed on the south side.

Amount expended during the year, \$925.01.

Total expenditure to Dec. 1, 1921, \$16,069.83.

#### FALMOUTH HEIGHTS SEA WALLS.

In March of this year an examination of the sea walls at Falmouth Heights showed the necessity for back filling along the middle section of the sea wall built by the town. Under an arrangement with William H. Connor and Son, filling to the amount of 154.5 cubic yards was placed back of this wall at a price of \$3.25 per cubic yard. The work was finished in May at a total cost of \$502.13.

Amount expended during the year, \$559.89.

Total expenditure to Dec. 1, 1921, \$50,566.83.

#### FALMOUTH INNER HARBOR.

On May 13, 1921, a contract was made with William E. Burke to include the placing of about 50 tons of stone chips and 50 tons of stone riprap back of the timber fence on the easterly side of this harbor. The contract price for furnishing and placing this stone was \$5.50 per ton. This work was completed Nov. 9, 1921, at a cost of \$550.00.

Complaints were received during the summer regarding the shoaling of the channel leading to this harbor. An investigation showed that sand was being carried by the sea around the outer end of one of the jetties and deposited in the channel entrance. To prevent a continuance of this shoaling it was decided to extend the westerly jetty.

Proposals were received on Sept. 2, 1921, and a contract was made Sept. 6, 1921, with the Bay State Dredging and Contracting Company to furnish and place about 4,000 tons of stone riprap and chips as an extension to the westerly jetty. The contract price for furnishing and placing this stone was \$3.85 per ton. This work was completed Oct. 1, 1921, at a cost of \$16,880.33.

Amount expended during the year, \$17,779.23.

Total expenditure to Dec. 1, 1921, \$99,317.80.

## GLOUCESTER HARBOR.

*Fresh Water Cove.* — In July of this year the Division was asked to dredge the entrance channel and basin of this cove to provide accommodation for fishing boats using the harbor. A channel had been dredged by the Federal government to serve the United States Coast Guard station near the entrance to the cove and a basin provided opposite the launchways. The United States Coast Guard was interested in further dredging, and agreed to make a contribution of not more than \$3,300 toward the cost of the work.

A contract was made on Aug. 15, 1921, with the Bay State Dredging and Contracting Company for dredging to a depth of 6 feet at mean low water a channel 100 feet wide on the bottom and 500 feet long, and a basin 125 feet wide on the bottom and 400 feet long, at the following contract prices: for dredging channel and basin and disposing of dredged material, 50 cents per cubic yard; for removing and disposing of all boulders, \$12 per cubic yard.

During the progress of the work, in response to requests for an extension of the dredging, the length of the basin was increased 100 feet. Work under this contract was completed Sept. 22, 1921, at a cost of \$15,477.72.

*Gloucester Inner Harbor.* — In connection with the work at Fresh Water Cove, the contractor agreed to dredge at the same contract prices to the depth of 18 feet at mean low water an area about 300 feet long and 70 feet wide lying between the 18-foot contour and the harbor line opposite and northerly of the entrance to Vincent's Cove. The work was completed Sept. 22, 1921.

Amount expended during year, \$17,477.53.

Total expenditure at Gloucester Harbor to Dec. 1, 1921, \$107,244.74.

## HERRING RIVER, HARWICH.

On Feb. 10, 1921, hearing was held upon a petition of the selectmen of Harwich for dredging and for the extension of jetties and bulkhead at this river. Proposals for dredging and riprap work were received, and on May 13, 1921, a contract with William E. Burke was made to include the dredging



of the entrance channel 60 feet wide on the bottom, 1,000 feet long and 6 feet deep at mean low water, and the placing of about 500 tons of stone chips and 500 tons of stone riprap on the beach east of the entrance to the river. The contract prices are: for dredging channel, 63 cents per cubic yard; for removing boulders, \$10 per cubic yard; for furnishing and placing riprap, \$5.10 per ton.

The work of dredging the entrance channel was completed Sept. 17, 1921, but the protective work has not been begun. It is expected that the riprap will be placed early in the coming spring.

Amount expended during the year, \$8,578.84.

Total expenditure to Dec. 1, 1921, \$50,168.88.

#### HYANNISPORT HARBOR.

On Feb. 10, 1921, hearing was held upon a petition of the Hyannisport Village Improvement Association, and others, for dredging a channel in this harbor and for the removal of boulders back of the breakwater. A contract was made with William E. Burke on May 13, 1921, to include the dredging to the wharf in this harbor of a channel 700 feet long, 150 feet wide, and 6 feet deep at mean low water, and the removal of boulders from an area of about 16 acres lying northeast of the outer end of the breakwater. The contract prices are: for dredging, 63 cents per cubic yard; for removing boulders, \$10 per cubic yard; for removing boulders from area of 16 acres northeast of breakwater, \$90 for each day the lighter is engaged in the work.

The dredging in this harbor is now nearing completion, but the removal of the boulders from the area back of the breakwater will not be begun until the coming spring.

Amount expended during the year, \$7,194.29.

Total expenditure to Dec. 1, 1921, \$59,683.11.

#### KATAMA BAY, EDGARTOWN.

The work of excavating a channel through South Beach to connect Katama Bay with Edgartown Harbor was completed in March of this year at a cost of \$2,168.46. Attempts had been made previously by local fishermen to dig a channel



through this beach, but each time the opening had failed to maintain itself. The fishermen interested were convinced that with a larger expenditure a wider opening made under certain conditions of wind and tide would be permanent. The Division agreed to have this work done, under the direction of its chief engineer, by local labor at a cost not to exceed \$2,500. Toward this cost the town made a contribution of \$300.

On March 23 an opening was made through the beach. By the action of wind, tide and current the width of the opening was rapidly increased to 150 feet. Since the completion of the work the opening has reached a width of 500 feet.

Amount expended during the year, \$2,547.09.

Total expenditure at Edgartown Harbor to Dec. 1, 1921, \$2,826.62.

#### LAKE ANTHONY.

On Feb. 10, 1921, hearing was held upon the petition of the selectmen of Oak Bluffs for dredging in Lake Anthony. A contract was made on May 13, 1921, with William E. Burke to include dredging to a depth of 8 feet at mean low water of the entrance channel 100 feet wide and 750 feet long, and of the anchorage basin 800 feet long and 200 feet wide. The contract prices for this work are: for dredging, 43.3 cents per cubic yard; for removing boulders, \$10 per cubic yard. Toward the cost of this work a contribution of \$2,500 has been made by the town of Oak Bluffs. This work has not been begun but is expected to be completed during the coming winter.

Amount expended during the year, \$341.52

Total expenditure to Dec. 1, 1921, \$62,486.70.

#### MENAMSHA INLET.

On Feb. 10, 1921, hearing was held upon petitions of the selectmen of Chilmark, and others, for dredging Menamsha Inlet. In the following month certain repairs to the jetties at this harbor were requested by the superintendent of the Second Lighthouse District.

A contract with William E. Burke was made on May 13, 1921, to include the dredging of an anchorage basin 300 feet long, 150 feet wide and 6 feet deep at mean low water, and the placing of about 200 tons of stone riprap in strengthening

and repairing the jetties, and the moving and resetting of the light on the east jetty. The contract prices for this work are: for dredging, 53 cents per cubic yard; for furnishing and placing stone riprap, \$5.80 per ton; for lifting and resetting, not exceeding twelve large stones now in the jetties, including lifting and resetting the stones in which the lantern standard is fixed, the lump sum of \$275. This work is not yet begun.

Amount expended during the year, \$605.92.

Total expenditure to Dec. 1, 1921, \$64,625.61.

#### NEW BEDFORD STATE PIER.

The matter of leasing this pier for a term of years, under advisement at the date of the report for 1920, was further considered early in the year. On Dec. 4, 1920, advertisements were published in the New Bedford and Boston papers asking for proposals for the lease of the pier.

These proposals were received Dec. 20, 1920. In the following month the Division voted to lease the pier to the New Bedford Storage Warehouse Company. Before proceeding further in this matter notice of this intention was sent, in accordance with the provisions of chapter 375 of the Acts of 1920, to the mayor and aldermen of New Bedford. At their request a public hearing relative to this lease was held in New Bedford on Feb. 19, 1921.

A lease under date of March 1, 1921, to the New Bedford Storage Warehouse Company for a term of five years was given under the provisions of chapter 375 of the Acts of 1920, and provided for the payment of rental as follows: \$12,000 for the first year; \$13,500 for the second year; \$15,000 for the third year; \$16,500 for the fourth year; and \$18,000 for the fifth year. Since this date the New Bedford Storage Warehouse Company has been in charge of the operation of the pier.

This pier is capable of accommodating a vessel 600 feet long with a draft of 25 feet. It is provided with electric portable hoists for handling cargo, and is equipped to serve large ocean-going steamers.

Upon the pier is a steel and concrete two-story building 300 feet long and 105 feet wide provided with a freight elevator. In extension of this building two one-story wooden sheds have



been built, in addition to a wooden shed for the use of immigrants. These buildings give a storage area of approximately 82,000 square feet.

A channel 25 feet deep at mean low water leads from deep water in Buzzards Bay to this pier. Additional dredging to facilitate pier operations is now under consideration.

#### NOBSCUSSET HARBOR.

On Feb. 10, 1921, hearing was held upon petition of the selectmen of Dennis for raising, widening and strengthening the breakwater at Nobscusset Point. A contract was made on Aug. 15, 1921, with Calvin G. Fletcher to include the furnishing and placing of about 800 tons of stone riprap to strengthen and repair about 100 feet of this breakwater. The contract price for furnishing and depositing this stone in the breakwater was \$6 per ton. This work was completed Nov. 27, 1921, at a cost of \$4,868.50.

Amount expended during the year, \$5,319.67.

Total expenditure to Dec. 1, 1921, \$29,033.61.

#### OAK BLUFFS SEA WALL.

In December the attention of the Division was called to the need for further protection at the sea wall on the easterly side of Sea View Avenue. A contract made May 13, 1921, with William E. Burke included the placing of about 500 tons of stone chips and 1,000 tons of stone riprap in front of this wall. The contract price for furnishing and placing this stone was \$4.95 per ton. This work was completed Oct. 23, 1921, at a cost of \$7,455.56, and comprised the protection of about 345 feet at the southerly end of the wall.

To furnish needed protection to the remaining 250 feet at the northerly end of the wall a contract was made on Nov. 18, 1921, with the T. A. Scott Company, Inc., to place about 300 tons of stone chips and 700 tons of stone riprap. The contract price for furnishing and placing this stone is \$6.4 per ton. This work is now in progress.

Amount expended during the year, \$7,109.26.

Total expenditure to Dec. 1, 1921, \$29,151.37.



## SCITUATE SEA WALLS.

By the provisions of chapter 585 of the Acts of 1920 the Division was authorized to make certain expenditures for the purpose of protecting the shores in the town of Scituate from damage by the sea. For this the Division may expend during 1920, 1921, 1922, 1923 and 1924 a total sum not exceeding \$250,000, of which one-third is to be contributed by the town of Scituate, one-third by the county of Plymouth, and one-third from State appropriations available for river and harbor improvement. The expenditure in any one year is limited to \$100,000, except that an unexpended balance in any year may be used in the succeeding year. This act was not to become effective until accepted by the county commissioners and the town.

At a special town meeting held Dec. 19, 1920, the town of Scituate voted to accept the provisions of the act, and appropriated \$25,000 for the work of shore protection during 1921. On Dec. 18, 1920, the county commissioners of Plymouth County voted to accept the act.

At the beginning of the year conferences were held with the selectmen and the county commissioners, at which reports of the engineering department upon examination of shore conditions in Scituate were discussed. It was decided to spend the money available in 1921 in the localities where the need of protective work seemed most urgent. In accordance with this policy, work during the year has been carried on at the Glades, at Humarock Beach and at Third Cliff.

*Glades.* — On Sept. 14, 1921, a contract was made with Arthur J. Mitchell for building about 253 feet of concrete sea wall, about 300 feet of concrete footings under an existing concrete wall, and the excavating of about 7,500 cubic yards of coarse gravel or shingle from an area westerly of the proposed wall and depositing the same on the beach. The contract prices for the work are: for furnishing materials and constructing the new wall, \$11 for each cubic yard of concrete measured in place in the completed work; for furnishing materials and constructing the concrete footings, \$4 for each linear foot of completed footing; for excavating, placing and grading of all

material, \$1 for each cubic yard of material measured in place before excavating. This work is now in progress.

Amount expended during the year, \$6,360.94.

Total expenditure to Dec. 1, 1921, \$6,412.57.

*Humarock Beach.* — On May 27, 1921, a contract was made with John Williams & Co. for the construction of about 2,300 linear feet of concrete sea wall with return walls, three sets of concrete steps, forty-six concrete jetties and one concrete apron at this beach. The contract prices for this work were: for furnishing materials and constructing the main wall and steps, \$12.50 per cubic yard of concrete measured in the completed work; for furnishing materials and constructing each spur jetty, \$150 for each complete jetty 25 feet in length; for furnishing material and constructing concrete slab and shutoff walls at the end of Marshfield Avenue, \$400 for the completed work. The cost of the apron for the protection of Marshfield Avenue, amounting to \$400, was paid by the town. This work was completed Oct. 7, 1921, at a cost of \$55,564.75.

Amount expended during the year, \$56,724.56.

Total expenditure to Dec. 1, 1921, \$56,960.63.

*Third Cliff.* — On March 11, 1921, a contract was made with the Bay State Dredging and Contracting Company for placing riprap near the southerly end of this cliff at a price of \$5.80 per ton. At the completion of this work on April 27, 1921, stone riprap to the amount of 3,700 tons had been placed to protect the southerly end of the cliff, at a cost of \$21,527.98.

Amount expended during the year, \$22,148.51.

Total expenditure to Dec. 1, 1921, \$22,148.51.

#### TAUNTON RIVER, SOMERSET.

In September request was received from the New England Oil Refining Company for dredging by the Commonwealth of an area in Taunton River between Slades Ferry bridge and the Brightman Street bridge. Toward the cost of this work the company agreed to make a contribution of \$12,500.

A contract was made on Nov. 3, 1921, with the Bay State Dredging and Contracting Company for dredging to the depth of 30 feet at mean low water an area in Taunton River lying between the Slades Ferry bridge and the Brightman Street



bridge. The contract prices for this work are: for dredging, 72 cents per cubic yard; for removing boulders, \$22 per cubic yard. This work is now in progress.

Amount expended during the year, \$2,512.46.

Total expenditure to Dec. 1, 1921, \$4,635.40.

#### WEST BAY, BARNSTABLE.

The work of dredging a channel in this bay, under contract of July 1, 1920, with the Bay State Dredging and Contracting Company, was completed Jan. 13, 1921, at a cost of \$27,661.14.

An examination made in March of this year showed the urgent need of protecting the bank east of the entrance channel and the crest of the beach west of the west jetty. A contract made on May 13, 1921, with William E. Burke included the placing of about 500 tons of stone chips on the bank east of the entrance channel, and about 200 tons of stone chips and 500 tons of stone riprap on the crest of the beach west of the west jetty. The contract price for furnishing and placing this stone is \$4.97 per ton. This work is now in progress.

Amount expended during the year, \$2,539.57.

Total expenditure to Dec. 1, 1921, \$84,067.95.

#### WILD HARBOR, FALMOUTH.

On May 13, 1921, a contract was made with William E. Burke to include the dredging of an entrance channel to the inner basin at this harbor. The specifications provided that the channel should be dredged 900 feet long, varying in width from 100 feet at the outer end to 60 feet on the inner portions and 6 feet deep at mean low water. The contract prices were: for dredging, 46.5 cents per cubic yard; for removing and disposing of boulders, \$10 per cubic yard. This work was completed July 29, 1921, at a cost of \$6,442.05.

While the dredging was in progress it was found that the stone work in the jetty at this harbor had settled to such a degree that in heavy weather sand was being driven over the jetty into the entrance channel. Under an agreement with William H. Connor & Son Company a concrete top was built upon this jetty at a cost of \$1,105.

Hearing was held on July 15, 1921, upon a petition of Ed-



ward N. Dahlborg for an extension of this jetty. On Aug. 15, 1921, a contract was made with Calvin G. Fletcher to include the placing of about 2,000 tons of stone riprap and chips as an extension of this breakwater. The contract price for furnishing the stone and building this extension was \$6 per ton. This work was completed Nov. 27, 1921, at a cost of \$12,228.88.

Amount expended during the year, \$17,638.45.

Total expenditure to Dec. 1, 1921, \$33,253.17.

#### WITCHMERE HARBOR.

On Feb. 10, 1921, hearing was held upon a petition of the selectmen of Harwich for dredging and extension of jetties at this harbor. A contract made on May 13, 1921, with William E. Burke included dredging in the entrance channel to this harbor to a depth of 6 feet at mean low water for a width of 60 feet on the bottom and a length of 850 feet. The contract prices for this work were: for dredging, 63 cents per cubic yard; for removing boulders, \$10 per cubic yard. This work was completed Oct. 23, 1921, at a cost of \$4,978.26.

An examination of the west jetty at this harbor, made in October, showed that sand was working through the spaces between the stones and causing shoals in the channel. To protect the channel and repair the breakwater a contract was made on Nov. 18, 1921, with T. A. Scott Company, Inc., to include the placing of about 300 tons of stone chips along the west side of the westerly jetty. The contract price for furnishing and placing this stone is \$6.95 per ton. This work is now in progress.

Amount expended during the year, \$5,195.69.

Total expenditure to Dec. 1, 1921, \$34,965.10.

## MISCELLANEOUS MATTERS.

## GREAT PONDS.

Jurisdiction over great ponds belonging to the Commonwealth, these ponds containing in their natural state 10 or more acres of land, was conferred upon the former Board of Harbor and Land Commissioners by chapter 318 of the Acts of 1888, and further authority given that Board by chapter 379 of the Acts of 1904, to sell and convey or lease any of the islands owned by the State in the great ponds, subject to the approval of the Governor and Council.

During the year the Division has made examinations, held conferences or taken other proceedings relative to Baddacook Pond, Groton; Farm Pond, Oak Bluffs; Furnace Pond, Pembroke; Island Creek Pond, Duxbury; Lake Quinsigamond, Worcester; Manchaug Lake, Douglas and Sutton; North Pond, Hopkinton and Milford; Martins Pond, North Reading; Oldham Pond, Pembroke; Phillipston Pond, Phillipston; Pontoosuc Lake, Pittsfield; Stockbridge Bowl, Stockbridge; Wenham Pond, Carver; Whalom Lake, Lunenburg.

A list of the lakes and ponds of the State with areas of 10 or more acres, given by counties, is printed in the report of the Commission on Waterways and Public Lands on "Water Resources of Massachusetts, 1918."

By chapter 12 of the Resolves of 1921 the Division of Waterways and Public Lands was directed to make surveys, examinations and maps of the great ponds in the Commonwealth except those under the jurisdiction of any State board, commission or department other than the Department of Public Works, and was authorized to expend \$5,000 during the years 1921 and 1922 for this purpose. In accordance with this resolve a survey has been made of the following ponds: —

NAME.	Location.	Area (Acres).	Maximum Depth (Feet).
Coonemessett Pond . . . . .	Falmouth . . . . .	157.52	43.4
Crooked Pond . . . . .	Falmouth . . . . .	34.09	43.0
Deep Pond . . . . .	Falmouth . . . . .	26.69	29.1
Jenkins Pond . . . . .	Falmouth . . . . .	86.68	44.2
Long Pond . . . . .	Falmouth . . . . .	149.65	76.4
Mares Pond . . . . .	Falmouth . . . . .	29.11	56.3
Round Pond, east of Coonemessett Pond	Falmouth . . . . .	11.46	8.8
Round Pond . . . . .	Falmouth . . . . .	18.06	25.2
Shallow Pond . . . . .	Falmouth . . . . .	11.51	2.9
Spectacle Pond . . . . .	Falmouth . . . . .	19.25	15.5
Beck Pond . . . . .	Hamilton . . . . .	35.8	13.5
Gravelly Pond . . . . .	Hamilton . . . . .	45.4	56.2
Round Pond . . . . .	Hamilton . . . . .	36.8	24.3
Lake Mahkeenac . . . . .	Stockbridge . . . . .	371.7	43.9
Coys Pond . . . . .	Wenham . . . . .	24.5	7.5

Many ponds or reservoirs in the Commonwealth have been created by the building of dams across streams which are in some instances the outlets of great ponds. Often it is difficult to decide whether a great pond exists in these localities or whether the ponds are wholly artificial.

#### CONSERVING AND EQUALIZING THE FLOW OF WATER IN RIVERS AND STREAMS.

By chapter 87 of the Resolves of 1918 a special commission on the water resources of the Commonwealth of Massachusetts was created, including in its membership the chairman of the Commission on Waterways and Public Lands, to investigate the water resources of the Commonwealth, and their report was printed as Senate Document No. 298 of 1919.

By chapter 359, Acts of 1909, chapter 564, Acts of 1912, and chapter 84, Resolves of 1917, co-operation was established between the Commonwealth and the Water Resources Branch of the United States Geological Survey, whereby data relating to the gauging of streams within the Commonwealth, and other work of a similar character carried on by the said survey,



have been obtained for use by the Division, said data being available for other departments of the Commonwealth.

Toward the cost of this work the Commonwealth has paid during the year, \$2,999.96.

#### PROVINCE LANDS.

The territory belonging to the Commonwealth, known as the Province Lands in Provincetown, comprises about 3,390 acres lying northerly and westerly of a line described in chapter 470 of the Acts of 1893. By the terms of this act the Board of Harbor and Land Commissioners was given general care and supervision of this area.

Reclamation work on these lands has been carried on under the direction of a superintendent since 1894. To prevent the movement of the sand the barren dunes are first covered with brush or planted with beach grass. The grass is pulled in bunches about 2 inches thick for transplanting in rows about 4 feet apart and 6 inches deep, and so transplanted lives between four and five years. This work is followed and reinforced by the transplanting of trees and shrubs.

During the year work on these lands has been continued in accordance with these methods. Twenty acres of sand dunes have been covered with brush, and 8 acres of bayberry transplanted. In addition, 65,000 pines were transplanted.

The sum of \$178.70 has been paid into the State treasury during the year, being the amount received from licenses issued to various parties to cultivate and pick cranberries on the bogs, and to mow meadowlands.

Amount expended during the year, \$3,998.59.

Total expenditure to Dec. 1, 1921, \$89,128.56.

#### MASSACHUSETTS ATLAS SHEETS AND TOWN BOUNDARY ATLASES.

Under authority of chapter 57, Resolves of 1890, chapter 42, Resolves of 1891, chapter 360, Acts of 1900, and chapter 69, Resolves of 1915, 3,650 atlas sheets of the map of the Commonwealth and 3 town boundary atlases have been sold during the year ending Nov. 30, 1921, for which \$530.20 was received and forwarded to the Treasurer and Receiver-General.

No atlases were delivered during the year under the authority of chapter 360, Acts of 1900, as amended by chapter 484, Acts of 1909.

#### RE-ESTABLISHMENT OF CERTAIN TRIANGULATION STATIONS.

By chapter 223 of the General Acts of 1915, the Board of Harbor and Land Commissioners was authorized to make such surveys and do such other work as may be required by any order of the Land Court; to re-establish and permanently mark certain stations previously established in connection with the topographical survey of the Commonwealth and the town boundary survey, which have been lost or destroyed; and to obtain the geographical position of such new points and stations as may be required from time to time by the court. The Board was allowed to expend not exceeding \$1,000 from the sum of \$1,500 which may be annually paid out of the State treasury.

During the year the location of the following triangulation stations was determined and permanently marked on the ground, and their geographical positions furnished to the Land Court: 7 stations in Worcester; 9 stations in Sandwich; 7 stations in Nantucket; 7 stations in Framingham; and 3 stations in Essex.

Further details of these stations are in the files of the Division.

Amount expended during the year, \$956.55.

Total expenditure to Dec. 1, 1921, \$6,664.74.

#### SPECIAL REPORTS TO THE LEGISLATURE.

*Traffic Tunnel to connect Boston and East Boston.* — Report made March, 1921, under the provisions of chapter 73 of the Resolves of 1920, by the Division of Waterways and Public Lands of the Department of Public Works and the transit department of the city of Boston.

*Gloucester Marshes and Beaches.* — House No. 356 of 1921. Report made Jan. 7, 1921, under provisions of chapter 34 of the Resolves of 1920, by a special commission consisting of the Commissioner of Public Works, the county commissioners of



Essex County, and the mayor of Gloucester, relative to the taking over for public uses of certain marshes and beaches in the city of Gloucester.

*Bridge over Lobster Cove, Gloucester.* — House No. 357 of 1921. Report made Jan. 12, 1921, under the provisions of chapter 52 of the Resolves of 1920, by the Department of Public Works, relative to the necessity and cost of the construction of a new bridge.

*Boston & Maine Railroad Claim against the Commonwealth.* — House No. 358 of 1921. Report made Jan. 1, 1921, under the provisions of chapter 37 of the Resolves of 1920, by the Attorney-General and the Division of Waterways and Public Lands of the Department of Public Works, relative to a certain claim of the Boston & Maine Railroad.

*Mystic, Malden and Neponset Rivers and Chelsea Creek.* — House No. 689 of 1921. Report made Jan. 12, 1921, under the provisions of chapter 17 of the Resolves of 1919, by the Department of Public Works, Division of Waterways and Public Lands, relative to improvement of these rivers.

*Boston and Chelsea Transportation Facilities.* — House No. 1157 of 1921. Report made Feb. 1, 1921, under the provisions of chapter 71 of the Resolves of 1920, by the Division of Waterways and Public Lands of the Department of Public Works, relative to transportation facilities.

*Commonwealth Pier No. 5, South Boston.* — House No. 1261 of 1921. Report made Feb. 23, 1921, by the Division of Waterways and Public Lands of the Department of Public Works, in response to a communication from the committee on rules of the House of Representatives, relative to operation of this pier.

*Rail Connections at East Boston.* — House No. 1331 of 1921. Report made March 8, 1921, under the provisions of chapter 54 of the Resolves of 1920, by a special commission consisting of the Commissioner of Public Works, the chairman of the Department of Public Utilities, and the Supervisor of Administration, relative to the best route for making rail connections between the Commonwealth flats at East Boston and the Boston & Albany and Boston & Maine railroads.

*Dry Dock Claims.* — House No. 1173 of 1921. Report made



Feb. 4, 1921, by the Department of Public Works, Division of Waterways and Public Lands, under the provisions of section 35 of chapter 30 of the General Laws, relative to claims growing out of the construction by the Commonwealth of the dry dock at South Boston.

#### LICENSES GRANTED DURING THE YEAR.

Nos.

97. Petition of the Nantucket Yacht Club for license to build a bulkhead and fill solid in Nantucket Harbor, Nantucket. Granted Dec. 3, 1920.
98. Petition of Jessie B. Dawes for license to build a timber bulkhead and fill solid at Houghs Neck, Quincy. Granted Dec. 9, 1920.
99. Petition of the Pilgrim Tercentenary Commission for approval of plans for building structures, filling solid, and other work in Plymouth Harbor, Plymouth, as authorized by chapter 107 of the Resolves of 1916, and chapter 187 of the Special Acts of 1919. Granted Dec. 14, 1920.
100. Petition of the town of Barnstable, by a committee of said town, for license to build a public wharf, on piles, and a landing, in Lewis Bay, Barnstable. Granted Dec. 20, 1920.
101. Petition of Laura C. Foster for license to build a sea wall and fill solid in Smiths Cove in Gloucester Harbor, Gloucester. Granted Dec. 20, 1920.
102. Petition of Alfred Therriault for license to build a sea wall and fill solid in Salem Harbor at Palmers Point, Salem. Granted Dec. 24, 1920.
103. Petition of the Haverhill Electric Company for license to lay and maintain a submarine cable in and under Merrimack River, Haverhill. Granted Dec. 27, 1920.
104. Petition of the Palmer and Parker Company for license to build a pile and timber bulkhead on the south channel of Mystic River, Boston. Granted Dec. 27, 1920.
105. Petition of the city of Boston, by its commissioner of public works, for license to build and maintain a concrete sewer and to fill solid in Boston Harbor at South Boston. Granted Jan. 10, 1921.
106. Petition of The Edison Electric Illuminating Company of Boston for license to lay a cable in Charles River at and near the draw opening of Warren bridge, Boston. Granted Jan. 10, 1921.
107. Petition of the Brown Betty Amusement Company, Incorporated, for license to build a wall and fill solid in Oldham Pond, Pembroke. Granted Jan. 10, 1921.
108. Petition of Jonathan Warner for license to build and maintain a pile pier in Vineyard Sound at Squaw Island, in Barnstable. Granted Feb. 4, 1921.

Nos.

109. Petition of the Fairhaven Mills for license to build and maintain a pile and timber bulkhead and fill solid in Acushnet River adjoining Coggeshall Street bridge, in New Bedford. Granted Feb. 18, 1921.
110. Petition of the city of Boston for license to drive additional piles in Boston Harbor at the east wharf at Long Island, in Boston. Granted Feb. 25, 1921.
111. Petition of the city of New Bedford for license to build and maintain a pile and timber bulkhead and riprap slope, and to fill solid, in Acushnet River at Pope's Island, in New Bedford. Granted Feb. 25, 1921.
112. Petition of the Boston & Maine Railroad for license to repair and strengthen its railroad bridge No. 50 on its Portland Division, over Merrimack River, in Newburyport and Salisbury. Granted March 25, 1921.
113. Petition of the county commissioners of Barnstable County for license to make repairs to Bass River bridge across Bass River in Yarmouth and Dennis. Granted April 8, 1921.
114. Petition of the Western Union Telegraph Company of New York for license to lay two submarine cables in Fort Point Channel at Summer Street bridge and across the draw way in said bridge, in Boston. Granted April 8, 1921.
115. Petition of the Western Union Telegraph Company of New York for license to lay a submarine cable in Beverly Harbor westerly of the Boston & Maine Railroad bridge, in Beverly and Salem. Granted April 8, 1921.
116. Petition of Batchelder Brothers for license to drive piles in front of its bulkhead on Roxbury Canal, in Boston. Granted April 15, 1921.
117. Petition of Anna T. Fitzgerald for license to construct and maintain a building supported by concrete piers in and over Lake Quinsigamond at Lake Avenue, in Worcester. Granted April 15, 1921.
118. Petition of the town of Chatham for license to build a pile pier and float-stage in Little Mill Pond, in Chatham. Granted April 15, 1921.
119. Petition of the Monomoy Weir and Fish Company, Incorporated, for license to build a pile pier in Mill Pond, in Chatham. Granted April 15, 1921.
120. Petition of the town of Gosnold for license to build a pile wharf and wall, to fill solid, and to dredge in Cuttyhunk Harbor at Cuttyhunk Island, in Gosnold. Granted April 22, 1921.
121. Petition of the trustees of the Universal Tide Power Company for license to build a dam, tide-gates, pile and timber bulkheads, to excavate a basin, and to dredge and deposit material, in Saugus River, Saugus. Granted April 29, 1921.
122. Petition of J. Philip Hartt for license to build a wharf and float-stages in Sippican Harbor, in Marion. Granted April 29, 1921.



Nos.

123. Petition of the William Stopford Company, Incorporated, for license to build a pile pier on Danvers River, in Beverly. Granted April 29, 1921.
124. Petition of the Fairhaven Mills for license to maintain an intake well and connecting pipe in Acushnet River, New Bedford. Granted May 6, 1921.
125. Petition of the Holyoke Water Power Company for license to build an addition to its power house on Connecticut River, in Holyoke. Granted May 6, 1921.
126. Petition of the New England Tire and Rubber Company for license to construct a pumping well and suction pipe in Connecticut River, in Holyoke. Granted May 6, 1921.
127. Petition of the Locke Coal Company for license to construct a wharf, repair a bulkhead and dredge in Malden River, in Malden. Granted May 6, 1921.
128. Petition of the city of Boston for license to reconstruct Chelsea bridge on the south channel of Mystic River, in Boston. Granted May 20, 1921.
129. Petition of Harold E. Davis for license to lay a water pipe in Annisquam River, in Gloucester. Granted May 23, 1921.
130. Petition of William H. Dolan for license to erect and maintain two wires across Whalom Lake, in Lunenburg. Granted May 27, 1921.
131. Petition of the West End Street Railway Company, by the Boston Elevated Railway Company, its attorney, for license to build a pile and timber bulkhead and fill solid in Chelsea Creek adjoining Eagle Street, East Boston. Granted June 3, 1921.
132. Petition of the West End Street Railway Company, by the Boston Elevated Railway Company, attorney, for license to maintain and continue filling along the northerly side of Mystic River, in Boston. Granted June 3, 1921.
133. Petition of the West End Street Railway Company, by the Boston Elevated Railway Company, attorney, for license to maintain and continue filling in tidewater westerly of Neponset River, south of Neponset Avenue, in Boston. Granted June 3, 1921.
134. Petition of the Eastern Massachusetts Street Railway Company for license to remove a dam and other structures from North River, in Salem. Granted June 13, 1921.
135. Petition of the Boston & Albany Railroad, the New York Central Railroad Company, lessee, for license to maintain its submarine signal cable at its bridge across Charles River, in Boston and Cambridge. Granted June 15, 1921.
136. Petition of the Boston & Albany Railroad, the New York Central Railroad Company, lessee, for license to maintain its submarine cable on its Grand Junction Branch across Broad Canal, in Cambridge. Granted June 15, 1921.



Nos.

137. Petition of the Boston, Revere Beach & Lynn Railroad Company for license to replace an old submarine cable with a new submarine cable under Saugus River, in Lynn and Revere. Granted June 15, 1921.
138. Petition of the New York, New Haven & Hartford Railroad Company for license to maintain three cables under Fort Point Channel and under the draw way in its drawbridge, in Boston. Granted June 15, 1921.
139. Petition of the Simpson's Patent Dry Dock Company for license to build a temporary cofferdam and to dredge in Boston Harbor at East Boston. Granted June 15, 1921.
140. Petition of the county commissioners of Essex County for approval of plans for two bridges in and over Good Harbor Creek in a proposed new highway back of Good Harbor Beach in Gloucester, as authorized by chapter 218 of the General Acts of 1919. Approval signed June 12, 1921.
141. Petition of Harry H. Wiggin for license to build structures, fill solid and to dredge in Mystic River, in Boston. Granted June 15, 1921.
142. Petition of the Naumkeag Steam Cotton Company for license to build a wall and bulkhead and to fill solid in Palmer's Cove, in Salem. Granted June 15, 1921.
143. Petition of the A. E. Little Company for license to build a wall in Forest River, in Marblehead. Granted June 15, 1921.
144. Petition of Manuel Furtado for license to build a pile wharf in Provincetown Harbor, in Provincetown. Granted June 15, 1921.
145. Petition of William H. Hand, Jr., for license to build and maintain launching ways in Acushnet River, in Fairhaven. Granted July 1, 1921.
146. Petition of the city of New Bedford by its water department for license to lay and maintain a 2-inch water pipe in Acushnet River and under the draw way in the New Bedford and Fairhaven bridge, in New Bedford. Granted July 1, 1921.
147. Petition of Harold Brooks for license to build and maintain structures, to fill solid and dredge a basin in Weymouth Fore River, in Weymouth. Granted July 1, 1921.
148. Petition of the Metropolitan District Commission for license to reconstruct a portion of a highway bridge over Saugus River, in Lynn. Granted July 2, 1921.
149. Petition of the New Bedford Gas and Edison Light Company for license to construct four dolphins and a platform in Acushnet River, New Bedford. Granted July 8, 1921.
150. Petition of the town of Saugus to build a temporary structure at the bridge across Saugus River at Lincoln Avenue, Saugus. Granted July 8, 1921.

Nos.

151. Petition of the city of Boston for license to drive piles at its north-west wharf at Long Island in Boston Harbor. Granted July 14, 1921.
152. Petition of the city of Boston for license to repair and extend the north pier at the Boston landing of the North Ferry in Boston Harbor. Granted July 14, 1921.
153. Petition of the county commissioners of Essex County for approval of plans for reconstructing the bridge over Plum Island River, Newbury, as authorized by chapter 482 of the Acts of 1921. Granted July 28, 1921.
154. Petition of N. E. Lowell for license to build a bulkhead and fill solid in Nantucket Harbor, Nantucket. Granted July 28, 1921.
155. Petition of the county commissioners of Middlesex County for license to construct an embankment and culvert in and over Martins Pond, in North Reading. Granted July 28, 1921.
156. Petition of the city of Boston, by its commissioner of public works, for license to build structures, drive piles, and to dredge in Roxbury Canal, in Boston. Granted Aug. 8, 1921.
157. Petition of the City Fuel Company for license to build a pile wharf on Weymouth Fore River, in Quincy. Granted Aug. 17, 1921.
158. Petition of Edward H. R. Green for license to build a pile wharf and platform in Buzzards Bay at Round Hill, Dartmouth. Granted Aug. 17, 1921.
159. Petition of the Western Union Telegraph Company of New York for license to lay and maintain a submarine cable in Beverly Harbor, in Beverly and Salem. Granted Aug. 17, 1921.
160. Petition of the Lewis Wharf Company for license to build a sea wall and fill solid at its wharf property in Boston Harbor, Boston. Granted Sept. 16, 1921.
161. Petition of the Haverhill Electric Company for license to build a sea wall, drive piles and fill solid in Merrimack River at Haverhill. Granted Sept. 21, 1921.
162. Petition of the New England Confectionery Company for license to drive piles in Fort Point Channel, in Boston. Granted Sept. 23, 1921.
163. Petition of the Point of Pines Trust, Alden A. Mills, trustee, for license to dredge and fill solid in Pines River, Revere and Saugus. Granted Sept. 23, 1921.
164. Petition of the city of Boston for license to lay and maintain a submarine cable in Fort Point Channel at Dover Street bridge, in Boston. Granted Oct. 3, 1921.
165. Petition of Sydney E. Hutchinson for license to build pile pier and float in Massachusetts Bay at Beverly Farms, in Beverly. Granted Oct. 3, 1921.



Nos.

166. Petition of the Boston & Maine Railroad for license to repair and strengthen its bridge No. 10 on Mill Creek, in Chelsea. Granted Oct. 3, 1921.
167. Petition of John S. Coy for license to build and maintain a pile and timber bulkhead and fill solid in Acushnet River at Popes Island, in New Bedford. Granted Oct. 3, 1921.
168. Petition of the Boston Consolidated Gas Company for license to construct and maintain a pile and timber bulkhead and fill solid in Roxbury Canal, in Boston. Granted Oct. 17, 1921.
169. Petition of the Glendale Coal Company for license to extend its wharf on piles, and to dredge the south channel of Mystic River, in Boston. Granted Oct. 17, 1921.
170. Petition of the General Electric Company for license to build a pile wharf and a bulkhead, to fill solid and dredge in Malden River, Everett. Granted Oct. 24, 1921.
171. Petition of the Eastern Massachusetts Street Railway Company for license to lay and maintain four submarine cables in Merrimack River, Haverhill. Granted Oct. 24, 1921.
172. Petition of the city of Boston, by its commissioner of public works, for license to surface the beach at Old Harbor, in South Boston. Granted Oct. 24, 1921.
173. Petition of the city of Boston, by its commissioner of public works, for license to strengthen the upstream pier of Dover Street bridge on Fort Point Channel, Boston. Granted Oct. 24, 1921.
174. Petition of the Russell Sim Tanning Company for license to build a sea wall, a bulkhead, and to fill solid in Salem Harbor, Salem. Granted Oct. 25, 1921.
- 174a. Petition of David M. Little for license to build a pile and timber bulkhead and to fill solid in Salem Harbor, Salem. Granted Oct. 25, 1921.
175. Petition of the city of Boston, by its commissioner of public works, for license to dump snow and ice into tidewater in Boston. Granted Oct. 28, 1921.
176. Petition of the board of trustees of the Boston Elevated Railway Company for license to dump snow and ice into tidewaters of Boston, Cambridge and Chelsea. Granted Oct. 28, 1921.
177. Petition of the Edison Electric Illuminating Company of Boston for license to build a bulkhead and pile wharf, to fill solid and dredge in Weymouth Fore River, Weymouth. Granted Oct. 28, 1921.
178. Petition of Edward H. R. Green for license to build a pile wharf and drive piles in Buzzards Bay at Round Hill, in Dartmouth. Granted Oct. 28, 1921.
179. Petition of Amey D. S. Peters for license to build a wharf in Mat-tapoisett Harbor, Mattapoisett. Granted Oct. 28, 1921.
180. Petition of the Boston & Maine Railroad for license to maintain a 7-conductor submarine cable in Saugus River at bridge No. 15, in Lynn and Saugus. Granted Nov. 4, 1921.



Nos.

181. Petition of the Boston & Maine Railroad for license to maintain submerged pipe lines and cables in Charles and Millers rivers, in Boston and Cambridge. Granted Nov. 4, 1921.
182. Petition of the Boston & Maine Railroad for license to maintain two 7-conductor submarine cables in Mystic River at drawbridge No. 7, in Somerville, and one 7-conductor submarine cable at drawbridge No. 8 in Mystic River, in Somerville and Medford. Granted Nov. 4, 1921.
183. Petition of the Boston & Albany Railroad, the New York Central Railroad Company, lessee, to maintain three telegraph cables and one telephone cable in Mystic River at bridge G. J. 4.15, in Somerville and Everett. Granted Nov. 4, 1921.
184. Petition of the Boston & Albany Railroad, the New York Central Railroad Company, lessee, to maintain an electric light cable and a Western Union cable in Chelsea Creek at bridge G. J. 7.43, in Boston and Chelsea. Granted Nov. 4, 1921.
185. Petition of the Boston & Albany Railroad, the New York Central Railroad Company, lessee, for license to maintain a submarine cable in Broad Canal at bridge G. J. 1.77, in Cambridge. Granted Nov. 4, 1921.
186. Petition of the Boston & Albany Railroad, the New York Central Railroad Company, lessee, for license to maintain a submarine cable in Charles River at bridge G. J. 0.33, in Boston and Cambridge. Granted Nov. 4, 1921.
187. Petition of the county commissioners of Essex County for approval of plans for the construction of three culverts in a proposed new highway back of Long Beach, Rockport, as authorized by chapter 218 of the General Acts of 1919, as amended by chapter 157 of the Acts of 1920. Approval signed Nov. 8, 1921.
188. Petition of the Salisbury Beach Associates for license to build and maintain jetties, and a dam at the mouth of the "Pool" in Merrimack River, Salisbury. Granted Nov. 16, 1921.
189. Petition of the New York, New Haven & Hartford Railroad Company for license to fill solid in South Bay, Boston. Granted Nov. 16, 1921.

#### PERMITS.

During the year 52 permits for miscellaneous purposes were granted. The Division also approved 63 permits granted by cities and towns for the construction and maintenance of fish weirs in tide water.

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#### RECOMMENDATIONS OF THE DEPARTMENT FOR LEGISLATION RELATING TO THE DIVISION OF WATERWAYS AND PUBLIC LANDS.

See pages 105 and 106 of this report.

## APPENDIX.

## RECEIPTS DURING FISCAL YEAR 1921.

*Port of Boston Fund.*

Rent under leases and permits . . . .	\$91,947 21	
Use of Commonwealth Pier 5 . . . .	100,965 72	
Use of Commonwealth Pier 1 . . . .	11,503 94	
Use of Maverick Street property . . . .	720 00	
Use of Hayward's Creek property . . . .	446 00	
Inspection of dumping, Boston Harbor . .	2,495 38	
Dumping at receiving basins . . . .	8,067 23	
License charges . . . . .	7,704 70	
Sundries . . . . .	677 64	
Sale of land and property . . . . .	127,786 79	
		<hr/>
		\$352,314 61

*Waterways Fund.*

Inspection of dumping, outside Boston Harbor	\$114 86	
License charges . . . . .	8,130 00	
		<hr/>
		8,244 86
Use of State Pier, New Bedford . . . . .		10,988 43

*Income, Division of Waterways and Public Lands.*

Use of Province Lands . . . . .	\$178 70	
Sale of Massachusetts Atlas sheets . . . .	530 20	
Certified copies of documents . . . . .	49 00	
		<hr/>
		757 90
Interest on bank accounts . . . . .		863 57
		<hr/>
		\$373,169 37

## EXPENDITURES FOR DEVELOPMENT AND IMPROVEMENT IN BOSTON HARBOR, 1859-1921, INCLUSIVE.

PAYMENTS.	Boston Harbor.	Com-monwealth Flats at East Boston.	Com-monwealth Flats at South Boston. <sup>1</sup>	Com-monwealth Pier No. 5.	Dry Dock.	Hayward's Creek.	Mystic River.
To Nov. 30, 1920 . . . . .	\$1,638,464 28	\$1,833,893 58	\$6,392,950 43	\$3,986,271 25	\$3,117,401 15	\$384,130 13	\$397,838 78
1921.							
East Boston Tunnel investigation . . . . .	1,303 75	-	-	-	-	-	-
Railroad tracks and roadways, South Boston . . . . .	-	-	14,178 36	-	-	-	-
Dredging and filling . . . . .	-	258,291 92	-	-	-	-	-
Haywards Creek development . . . . .	-	-	-	-	-	1,554 75	-
Extension, East Boston bulkhead . . . . .	-	90,885 73	-	-	-	-	-
Street and pier development . . . . .	-	-	105,053 66	-	-	-	-
Railroad connection, East Boston . . . . .	-	289 09	-	-	-	-	-
Completing dry dock . . . . .	-	-	-	-	45,000 00	-	-
Constructing Commonwealth Pier No. 1 . . . . .	-	-	-	-	-	-	-
Alterations and repairs, Commonwealth Pier No. 5 . . . . .	-	-	-	76,916 24	-	-	-
Boston Harbor, main channel . . . . .	14,520 85 <sup>2</sup>	-	-	-	-	-	1,220 00
Port of Boston Fund (chapter 203, Acts of 1921) . . . . .	-	-	-	-	-	-	-
	\$1,654,288 88	\$2,183,360 32	\$6,512,182 45	\$4,063,187 49	\$3,162,401 15	\$385,684 88	\$399,088 78

<sup>1</sup> Includes cost of Commonwealth Pier No. 6, \$1,067,598.90.<sup>2</sup> Contribution by Quincy Market Cold Storage and Warehouse Company, \$4,000.



EXPENDITURES FOR DEVELOPMENT AND IMPROVEMENT IN BOSTON HARBOR, 1859-1921, INCLUSIVE — *Concluded.*

PAYMENTS.	Malden River. <sup>1</sup>	Chelsea Creek.	Commercial Point, Dorchester Bay.	Commonwealth Pier No. 1, East Boston.	Commonwealth Pier No. 5, Operation and Maintenance.	Commonwealth Pier No. 1, Maintenance.	Maintenance of Other Property of Commonwealth.
To Nov. 30, 1920 . . . . .	\$31,000 00	\$60,305 86	\$53,213 10	\$1,114,658 80	\$326,591 02	\$20,114 15	\$196,427 42
1921.							
East Boston tunnel investigation . . . . .	-	-	-	-	-	-	-
Railroad tracks and roadways, South Boston	-	-	-	-	-	-	-
Dredging and filling . . . . .	-	-	-	-	-	-	-
Haywards Creek development . . . . .	-	-	-	-	-	-	-
Extension, East Boston bulkhead . . . . .	-	-	-	-	-	-	-
Street and pier development . . . . .	-	-	-	-	-	-	-
Railroad connection, East Boston . . . . .	-	-	-	-	-	-	-
Completing dry dock . . . . .	-	-	-	-	-	-	-
Constructing Commonwealth Pier No. 1 . . . . .	-	-	-	3,911 43	-	-	-
Alterations and repairs, Commonwealth Pier No. 5 . . . . .	-	-	-	-	-	-	-
Boston Harbor, main channel . . . . .	-	-	-	-	-	-	-
Port of Boston Fund (chapter 203, Acts of 1921) . . . . .	-	-	-	-	11,718 95	12,120 48	59,434 22
	\$31,000 00	\$60,305 86	\$53,213 10	\$1,118,570 23	\$338,309 97	\$32,234 63	\$255,861 64

Grand total, \$20,249,659.38.

<sup>1</sup> Expended by United States government.

APPROPRIATIONS, CONTRIBUTIONS AND EXPENDITURES FOR IMPROVEMENT OF SMALL HARBORS AND CHANNELS WITHIN BOSTON HARBOR, UNDER THE DIRECTION OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS AND PUBLIC LANDS, AND ITS PREDECESSORS, FROM 1893 TO 1921, INCLUSIVE.

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Cottage Park Channel, Winthrop.	Dredging . . .	\$19,255 71	\$1,000 00	\$20,234 37
Dorchester, easterly shore, Boston.	Dredging . . .	70,363 66	—	70,171 31
Harbor View, Boston . . .	Dredging . . .	10,146 00	—	146 00
Hingham Harbor . . .	Dredging . . .	13,180 69	3,000 00	16,180 69
Houghs Neck Channel, Quincy	Dredging . . .	26,989 58	3,500 00	28,489 58
Island End River, Everett . .	Survey . . .	264 10	—	264 10
Jeffries Point Channel . . .	Dredging . . .	12,961 90	—	2,961 90
Mystic River (near Lawrence and Wiggin's Wharf).	Dredging . . .	5,927 70	—	5,927 70
Neponset River . . .	Dredging . . .	44,732 53	—	44,731 79
Old Harbor Cove . . .	Dredging . . .	9,724 47	—	9,724 47
Orient Heights Channel . . .	Dredging . . .	45,679 15	—	45,323 67
Pleasant Park Yacht Club Channel.	Dredging . . .	3,154 92	—	3,154 92
Point Shirley . . .	Dredging . . .	3,713 37	—	3,713 37
Shirley Gut, Boston and Winthrop.	Dredging . . .	1,906 20	—	1,906 20
South Boston, southerly shore .	Dredging . . .	129,542 12	—	129,542 08
Stony Beach, Hull . . .	Sea wall . . .	11,794 85	—	11,522 02
Weir River, Hull . . .	Dredging . . .	105,963 51	25,000 00	130,963 51
Wessagussett Channel . . .	Dredging . . .	815 20	—	815 20
Weymouth Fore River . . .	Dredging . . .	47,192 02	—	32,267 53
Winthrop Harbor Channels . .	Dredging . . .	41,038 16	700 00	39,783 58
Wollaston Channel . . .	Dredging . . .	45,236 31	3,000 00	47,814 92
		\$649,582 15	\$36,200 00	\$645,638 91

CONTRIBUTIONS AND EXPENDITURES FOR RIVER AND HARBOR WORK  
FROM DEC. 1, 1920, TO NOV. 30, 1921, UNDER CHAPTER 481, ACTS  
OF 1909, AND CHAPTER 91 OF THE GENERAL LAWS.

LOCATION.	Character of Work.	Contributions.	Expenditure.
Acushnet River . . . . .	Dredging . . . . .	-	\$42,802 43
Brant Rock, Marshfield . . . . .	Jetties . . . . .	-	499 88
East Bay, Osterville . . . . .	Dredging . . . . .	-	3,297 23
Edgartown Harbor . . . . .	Extending channel through beach.	\$300 00	2,620 97
Ellisville Harbor . . . . .	Breakwater . . . . .	-	925 01
Falmouth Inner Harbor . . . . .	Extending jetties . . . . .	-	17,779 23
Glades, North Scituate . . . . .	Sea wall . . . . .	-	6,360 94
Gloucester Harbor . . . . .	Dredging . . . . .	-	17,477 53
Great Ponds . . . . .	Survey . . . . .	-	2,499 99
Herring River . . . . .	Dredging and riprap . . . . .	-	8,578 84
Humarock Beach, Scituate . . . . .	Sea wall . . . . .	19,735 37	56,724 56
Hyannisport . . . . .	Removing boulders and dredging.	-	7,194 29
Improvement of rivers and harbors . . . . .	General expenses . . . . .	-	3,448 46
Lake Anthony, Oak Bluffs . . . . .	Dredging . . . . .	-	341 52
Menamsha Inlet . . . . .	Riprap . . . . .	-	605 92
Nobscusset Harbor, Dennis . . . . .	Breakwater repairs . . . . .	-	5,319 67
Oak Bluffs . . . . .	Survey . . . . .	-	184 02
Pamet River . . . . .	Survey . . . . .	-	163 15
Plymouth Harbor . . . . .	Survey . . . . .	-	2,198 60
Scituate Harbor . . . . .	Dredging . . . . .	-	13 00
Taunton River . . . . .	Dredging . . . . .	-	2,674 89
Third Cliff, Scituate . . . . .	Protective work . . . . .	7,313 37	22,148 51
Vineyard Haven Harbor . . . . .	Survey . . . . .	-	354 45
West Bay, Osterville . . . . .	Dredging . . . . .	-	22,117 91
Wild Harbor . . . . .	Jetty extension . . . . .	-	17,638 45
Witchmere Harbor . . . . .	Dredging . . . . .	-	5,195 69
		\$27,348 74	\$249,165 14



APPROPRIATIONS, CONTRIBUTIONS AND EXPENDITURES FROM 1893 TO 1921, INCLUSIVE, FOR RIVER AND HARBOR WORK, UNDER THE DIRECTION OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS AND PUBLIC LANDS, AND ITS PREDECESSORS, TO NOV. 30, 1921 (EXCEPTING BOSTON HARBOR).

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Acushnet River . . .	Inspection . . .	\$118,764 85	—	\$118,764 85
Allens Harbor, Harwich . .	Surveys . . .	302 00	—	302 00
Allens Pond, Dartmouth . .	Survey . . .	195 95	—	195 95
Annisquam River, Gloucester .	Dredging, removing ledges and riprap.	107,630 63	—	107,260 75
Apponagansett Harbor and River, Dartmouth.	Survey, dredging and stone breakwater.	56,159 59	—	55,786 05
Barnstable Harbor . . .	Survey and dredging	17,392 18	\$1,500 00	18,554 64
Bass River, Beverly . . .	Dredging . . .	25,539 81	55,535 75	81,075 56
Bass River, Dennis and Yarmouth.	Jetties, dredging and survey.	88,089 74	2,500 00	89,104 74
Brant Rock, Marshfield . .	Sea wall . . .	4,703 81	—	4,703 81
Bucks Creek, Chatham . . .	Jetties, survey and dredging.	29,739 06	1,500 00	31,067 74
Buzzards Bay, Falmouth . .	Survey . . .	166 11	—	166 11
Cataumet Harbor and Squeague Pond, Bourne and Falmouth.	Dredging . . .	26,520 68	7,350 00	33,726 77
Centerville River, Barnstable .	Dredging . . .	6,103 22	1,500 00	7,603 22
Cohasset Harbor, Cohasset and Scituate.	Breakwater and dredging.	36,172 55	20,691 88	56,864 43
Concord River, Billerica . .	Removing boulders .	1,514 59	150 00	1,664 59
Connecticut River . . .	Investigation of navigation and surveys.	10,637 04	—	6,970 99
Connecticut River . . .	Improvement . . .	103 63	—	103 63
Connecticut River, Agawam .	Protective work .	20,396 09	—	18,814 42
Connecticut River, Chicopee .	Survey, wall and riprap.	25,149 02	640 00	25,789 02
Connecticut River, Hadley .	Protective work and diversion wall.	100,443 65	500 00	97,740 94 <sup>1</sup>
Connecticut River, Hatfield .	Dikes and riprap .	14,751 82	1,000 00	14,952 57
Connecticut River, Holyoke .	Marking and lighting old piers.	677 70	—	677 70
Connecticut River, Holyoke .	Dredging and protective work.	18,815 78	415 00	4,230 78
Connecticut River, Northampton.	Protective work .	1,525 80	—	1,524 20
Connecticut River, South Hadley.	Wall . . .	6,406 36	1,000 00	7,379 58
Connecticut River, West Springfield.	Protective work .	12,002 78	—	11,919 27 <sup>2</sup>
Conservation of waters . . .	Investigation . . .	40,999 96	—	38,766 22
Cotuit Harbor, Barnstable .	Dredging and survey	60,248 02	2,000 00	59,219 91
Cuttyhunk Harbor, Gosnold .	Jetties and dredging .	61,828 25	9,000 00	70,754 18
Deacons Pond Harbor, Falmouth. <sup>3</sup>	— . . .	—	—	—

<sup>1</sup> From 1888, inclusive.<sup>2</sup> From 1891, inclusive.<sup>3</sup> See Falmouth Inner Harbor.

APPROPRIATIONS, ETC. — *Continued.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Duxbury Bay and Harbor .	Dredging . . .	\$27,798 79	—	\$27,798 79
East Bay, Osterville . .	Jetties, dredging and removing scows.	61,258 79	\$10,000 00	70,924 23
Edgartown Harbor . . .	Survey and making channel	2,526 62	300 00	2,826 62
Ellisville Harbor . . .	Dredging . . .	16,069 83	—	16,069 83
Essex County beaches . .	Survey . . .	1,000 00	—	1,000 00
Essex River . . . . .	Dredging . . .	5,000 00	—	5,000 00 <sup>1</sup>
Fall River Harbor . . .	Improvement . .	350,290 54	—	1,130 18
Falmouth Heights, Falmouth .	Sea wall . . .	37,566 83	13,000 00	50,566 83
Falmouth Inner Harbor . .	Dredging, jetties and wall.	85,317 80	14,000 00	99,317 80
Gloucester Harbor, Gloucester .	Dredging and removing ledges.	99,744 74	7,500 00	107,244 74
Great Ponds . . . . .	Survey . . .	2,500 00	—	2,499 99
Green Harbor, Marshfield .	Jetties, dredging and survey.	90,804 54	—	76,466 85
Gun Rock Point, Hull . .	Breakwater . .	48,096 11	10,000 00	58,096 11
Harbor Cove, Gloucester . .	Survey and dredging	18,528 73	866 00	19,394 73
Herring Creek, Scituate . .	Survey . . .	253 76	—	253 76
Herring River, Harwich . .	Jetties and dredging .	48,313 18	2,500 00	50,168 88
Herring River, Wellfleet . .	Dikes and ditches .	11,832 74	10,000 00	21,800 73
Housatonic River, Sheffield .	Survey . . .	2,011 29	—	2,011 29
Hull . . . . .	Sea wall and survey .	25,258 32	8,882 06	34,140 38
Humarock Beach, Scituate .	Survey . . .	37,639 19	19,735 37	56,960 63
Hyannisport, Barnstable . .	Survey and breakwater.	57,183 11	2,500 00	59,683 11
Improvement of rivers and harbors.	General expenses .	15,068 52	—	15,068 52
Ipswich River, Ipswich . .	Jetty, wall, riprap and dredging.	47,325 48	1,000 00	48,318 92
Kings Beach, Swampscott .	Removal of obstruction.	166 41	—	166 41
Lake Anthony, Oak Bluffs .	Jetties and dredging .	63,695 74	2,000 00	62,486 70
Lake Quannapowitt, Wakefield	Investigation . .	1,004 21	—	345 32
Lewis Bay, Barnstable . .	Survey and dredging	29,211 64	—	28,963 21
Little Harbor, Marblehead .	Dredging . . .	8,666 16	2,500 00	11,166 16
Little River, Gloucester . .	Survey . . .	862 93	—	862 93
Lobster Cove, Gloucester .	Dredging . . .	33,047 26	1,500 00	34,547 26
Lynn Harbor, anchorage basin	Survey and dredging	121,789 29	5,200 00	121,588 07
Lynn Harbor and Saugus River	Dredging and filling .	90,942 35	37,500 00	128,442 35
Manchester Harbor . . .	Survey, jetties and dredging.	68,100 67	43,500 00	109,078 51
Menamsha Inlet, Chilmark and Gay Head.	Jetties, dredging and sea wall.	64,029 26	700 00	64,625 61

<sup>1</sup> Expended by United States government.

APPROPRIATIONS, ETC. — *Continued.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Merrimack River . . .	Investigation and survey.	\$1,308 50	—	\$1,208 50
Mill River, Gloucester . . .	Survey and dredging	24,632 86	\$300 00	24,899 59
Mitchells River, Chatham . . .	Survey . . .	322 96	—	322 96
Nantucket Harbor . . .	Dredging . . .	42,058 63	1,000 00	42,779 78
New Bedford Harbor . . .	Dredging . . .	1,409 76	—	1,409 76
New Bedford Harbor . . .	Pier, shed and dredging.	371,899 77	13,446 74 <sup>1</sup>	385,346 51
New Bedford State Pier . . .	Improvement . . .	73,461 00	—	73,436 38
New Bedford State Pier . . .	Operation and maintenance.	53,274 33	—	47,765 09
Newburyport Harbor . . .	Survey . . .	115 97	—	115 97
Nobscusset Harbor, Dennis . . .	Breakwater, dredging and riprap.	37,194 16	1,200 00	29,033 61
North River, Marshfield . . .	Surveys and removing rocks.	6,858 75	1,800 00	8,658 75
North River, Salem . . .	Survey . . .	704 52	—	704 52
Oak Bluffs . . .	Removing rocks . . .	632 45	—	594 95
Oak Bluffs . . .	Sea wall . . .	26,651 37	2,500 00	29,151 37
Onset Bay, Wareham . . .	Survey and dredging	14,295 89	1,000 00	15,295 89
Orleans . . .	Survey . . .	104 18	—	104 18
Pamet River, Truro . . .	Survey, dredging and repairing jetties.	191,259 95	1,200 00	192,459 95
Paskamansett River, Dartmouth.	Dredging and jetty . . .	5,227 68	—	5,227 68
Penikese Island, Gosnold . . .	Pile wharf and survey	5,300 00	—	5,192 95
Plum Island River, Newbury and Newburyport.	Survey . . .	983 31	—	983 31
Plymouth Harbor . . .	Dredging . . .	178,413 59	71,794 55	223,705 87 <sup>2</sup>
Popponesset Bay . . .	Dredging . . .	46,252 33	—	46,252 33
Powow River . . .	Dredging channel and riprapping wall.	502 94	—	502 94
Province Lands, Provincetown	Reclamation . . .	92,000 00	—	89,128 56
Provincetown Harbor . . .	Survey . . .	1,217 78	—	1,217 78
Quansett Harbor, Orleans . . .	Survey . . .	195 88	—	194 50
Quicks Hole, Gosnold . . .	Survey . . .	500 00	—	—
Red Brook Harbor, Bourne . . .	Removing pier . . .	275 00	—	275 00
Revere . . .	Stone breakwater . . .	60,407 09	—	60,397 93
Rock Harbor, Orleans . . .	Dredging . . .	12,108 25	400 00	12,492 71
Rockport Harbor . . .	Dredging and removing rocks.	14,429 32	—	13,749 02
Salem Harbor . . .	Survey . . .	3,050 05	—	1,050 05
Salt Pond River, Eastham . . .	Survey . . .	210 11	—	210 11
Salters Point, Dartmouth . . .	Breakwater . . .	13,509 59	1,500 00	15,009 59

<sup>1</sup> Paid by surety company.<sup>2</sup> \$57,000 expended under direction of United States government.



APPROPRIATIONS, ETC. — *Concluded.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Sandwich Harbor . . . .	Dredging channel, riprap and jetties.	\$80,579 84	—	\$80,579 84
Saugus River, Lynn and Saugus	Survey and dredging	19,206 64	\$2,000 00	20,845 17
Scituate . . . . .	Sea walls and riprap .	84,912 19	14,548 37	98,355 69
Scituate Harbor . . . .	Dredging . . . . .	96,676 92	8,300 00	104,976 92
Scorton Harbor, Sandwich .	Jetty and dredging .	19,426 39	500 00	17,774 34
Sesuit Harbor, Dennis . .	Jetty . . . . .	28,067 85	1,500 00	24,555 10
Sippican Harbor, Marion . .	Survey . . . . .	7 17	—	7 17
Smith's Cove, Gloucester .	Survey and dredging	5,163 07	—	5,163 02
South River, Salem . . .	Dredging . . . . .	10,523 65	3,000 00	13,462 66
South Watuppa Pond, Fall River.	Fenders and excavation.	203 42	—	203 42
Stage Harbor, Chatham . .	Dikes and survey .	10,803 01	—	10,803 01
Taunton River . . . . .	Survey and dredging	8,207 88	—	4,635 40
Taunton-Brockton waterway .	Investigation . . .	5,388 46	—	5,278 18
Taunton River-Boston Harbor Canal.	Survey . . . . .	10,000 00	—	9,932 75
Taunton River-Massachusetts Bay Canal.	Survey . . . . .	11,786 71	—	11,786 71
Vineyard Haven Harbor . .	Repairing sea wall .	9,564 51	2,380 50	11,945 01
Vineyard Haven Harbor, Tisbury.	Breakwater and dredging.	45,089 48	1,000 00	45,518 25
Waquoit Bay, Falmouth . .	Breakwater wall and bulkhead.	29,583 79	2,000 00	31,285 40
Wareham River . . . . .	Survey and dredging	37,349 27	5,000 00	42,349 27
Warrens Cove, Plymouth . .	Sea wall . . . . .	14,468 97	9,713 98	24,481 22
Watch Hill, Chatham . . .	Survey and riprap .	15,020 47	—	14,968 75
Wellfleet Harbor . . . . .	Survey and dredging	16,867 22	1,500 00	17,600 29
West Bay, Barnstable and Osterville.	Jetties and dredging .	74,105 32	10,000 00	84,067 95
West Falmouth Harbor, Falmouth.	Dredging . . . . .	25,655 31	—	24,386 18
West Harwich . . . . .	Survey . . . . .	9 00	—	9 00
Westfield River . . . . .	Survey . . . . .	6,296 90	—	6,037 29
Wild Harbor, Falmouth . . .	Jetty and dredging .	33,310 04	5,000 00	33,253 17
Winthrop shore . . . . .	Sea walls and protective work.	17,058 48	3,000 00	20,058 48
Witchmere Harbor, Harwich .	Jetties and dredging .	34,107 80	1,000 00	34,965 10
Woods Hole, Great Harbor, Falmouth.	Dredging . . . . .	5,468 86	1,500 00	6,968 86
Wrecks . . . . .	Removal from tide-water.	65,943 49	—	7,131 91
Yarmouthport Harbor . . .	Survey . . . . .	88,977 37	7,000 00	95,977 37
		\$4,656,482 95	\$473,550 20	\$4,592,941 04

## FEDERAL APPROPRIATIONS AND EXPENDITURES.

Federal appropriations and expenditures for improvement of rivers and harbors in Massachusetts from the establishment of the government to the close of the fiscal year ending June 30, 1921, as shown in the following tables, furnished by the Chief of Engineers, U. S. A.: —

TABLE No. 1. — *Localities at Present under Improvement.*

[Compiled from the annual report of the Chief of Engineers, U. S. A., for the fiscal year ending June 30, 1921.]

LOCALITY.	Expenditures.	Appropriations.
Newburyport Harbor . . . . .	\$494,064 44	\$494,100 00
Merrimack River . . . . .	404,401 95	414,466 72 <sup>1</sup>
Sandy Bay, Cape Ann, harbor of refuge . . . . .	1,941,478 00	1,950,000 00
Gloucester Harbor . . . . .	538,183 00	542,083 00
Beverly Harbor . . . . .	49,125 00	110,625 00
Salem Harbor . . . . .	71,368 66	71,368 66 <sup>2</sup>
Lynn Harbor . . . . .	471,000 77	476,837 00
Mystic River (upper portion) <sup>3</sup> . . . . .	305,515 23	336,050 00
Mystic River (below mouth of Island End River) <sup>3</sup> . . . . .		
Malden River . . . . .	149,891 55	149,950 00
Boston Harbor <sup>4</sup> . . . . .	12,604,864 31	12,675,827 58
Dorchester Bay and Neponset River . . . . .	95,008 00	95,233 00
Weymouth Fore River . . . . .	500,974 77	573,750 00
Weymouth Back River . . . . .	26,500 00	27,000 00
Plymouth Harbor . . . . .	363,868 69	391,959 80
Provincetown Harbor . . . . .	348,062 72	362,162 97
Pollock Rip Shoals, Nantucket Sound . . . . .	656,863 16	815,000 00
Nantucket Harbor of Refuge . . . . .	576,361 88	591,473 50
New Bedford and Fairhaven harbors . . . . .	769,310 00	769,610 00
Taunton River . . . . .	203,782 79	210,189 18
Fall River Harbor . . . . .	397,388 33	412,411 49
Totals . . . . .	\$20,968,013 25	\$21,470,097 90

<sup>1</sup> Of original amount appropriated, \$900 was carried to the surplus fund of the treasury from previous project.

<sup>2</sup> Of original amount appropriated, \$1,131.34 was carried to the surplus fund of the treasury.

<sup>3</sup> Now consolidated as one improvement.

<sup>4</sup> Including Chelsea Creek.

TABLE No. 2. — *Localities in which Work is not now in Progress.*

[Compiled from data furnished by the United States Treasury Department and the Chief of Engineers, U. S. A.]

LOCALITY.	Expenditures.	Appropriations.
Bass River . . . . .	\$20,150 34	\$20,150 41
Buzzards Bay Harbor . . . . .	2,500 00	2,500 00
Canapitset Channel . . . . .	5,312 54	9,800 00
Chatham Harbor . . . . .	12,171 36	13,732 79
Cohasset Harbor . . . . .	10,000 00	10,000 00
Duxbury Harbor . . . . .	37,000 00	37,000 00
East Dennis Breakwater . . . . .	7 57	1,500 00
Edgartown Harbor . . . . .	25,000 00	25,000 00
Essex River . . . . .	30,000 00	30,000 00
Hingham Harbor . . . . .	38,316 58	39,000 00
Hyannis Harbor . . . . .	221,787 75	221,267 07
Ipswich River . . . . .	5,617 91	7,500 00
Kingston Harbor . . . . .	8,940 09	10,000 00
Little Harbor, Woods Hole . . . . .	18,000 00	18,000 00
Manchester Harbor . . . . .	23,985 57	24,300 00
Marblehead Harbor . . . . .	833 42	1,900 00
Marthas Vineyard Harbor . . . . .	7,000 00	7,000 00
Powow River . . . . .	50,940 72	51,000 00
Rockport Harbor . . . . .	91,229 25	91,232 57
Scituate Harbor . . . . .	104,590 98	104,680 00
Town River . . . . .	37,577 41	37,577 41
Vineyard Haven Harbor . . . . .	55,387 35	60,000 00
Wareham Harbor . . . . .	95,997 30	96,236 00
Wellfleet Harbor . . . . .	11,365 57	16,000 00
Westport Harbor and River . . . . .	3,000 00	3,000 00
Winthrop Harbor . . . . .	9,000 00	9,000 00
Woods Hole Channel . . . . .	343,599 92	344,000 00
Totals . . . . .	\$1,269,311 63	\$1,291,376 25

RECAPITULATION.	Expenditures.	Appropriations.
Total of Table No. 1 . . . . .	\$20,968,013 25	\$21,470,097 90
Total of Table No. 2 . . . . .	1,269,311 63	1,291,376 25
Grand totals . . . . .	\$22,237,324 88	\$22,761,474 15



EXPENDITURES ON BOSTON HARBOR AND ITS TRIBUTARIES TO  
JUNE 30, 1921.

[The tributaries given are those now under improvement, and do not include tributaries heretofore improved.]

LOCALITY.	Expenditures.	Appropriations.
Boston Harbor proper <sup>1</sup> . . . . .	\$12,604,864 31	\$12,675,827 58
Mystic River (below mouth of Island End River) <sup>2</sup> . . . . .	} 305,512 23	336,050 00
Mystic River (upper portion) <sup>2</sup> . . . . .		
Malden River . . . . .	149,891 55	149,950 00
Totals . . . . .	\$13,060,268 09	\$13,161,827 58

<sup>1</sup> Including Chelsea Creek.

<sup>2</sup> Now one improvement.

CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION  
YEAR ENDING

Contract No.	WORK.	Contractor.	Date.
8	West Bay, Barnstable, dredging .	Bay State Dredging and Contracting Company.	July 1, 1920
14	Acushnet River, dredging . .	Bay State Dredging and Contracting Company.	Aug. 2, 1920
17	Winthrop Harbor, dredging . .	Bay State Dredging and Contracting Company.	Sept. 10, 1920
21	Third Cliff, Scituate, riprap . .	Bay State Dredging and Contracting Company.	Mar. 11, 1921
22	North Scituate, sea wall . . .	Arthur J. Mitchell . . .	Sept. 14, 1921
23	Humarock Beach, Scituate, concrete sea wall.	John Williams & Co. . .	May 27, 1921
24	East Boston, dredging and filling .	Atlantic, Gulf and Pacific Company.	May 11, 1921
25	East Boston, building bulkhead .	William L. Miller Company .	May 11, 1921
26	Dredging and riprap: Witchmere Harbor . . . . Oak Bluffs . . . . . Menamsha Creek . . . . Falmouth Inner Harbor . . . Wild Harbor, Falmouth . . . Herring River . . . . . Hyannisport . . . . . Lake Anthony . . . . . West Bay, Barnstable . . .	William E. Burke . . . .	May 13, 1921

OF WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE  
Nov. 30, 1921.

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1921.	Total paid to Nov. 30, 1921.	Estimated Amount of Contract.
Completed Jan. 13, 1921.	Dredging, 78 cents per cubic yard, measured in scows. Excavating boulders, \$20 per cubic yard.	\$20,263 39	\$27,661 14	\$31,200 00
Completed Feb. 19, 1921.	Dredging, 52 cents per cubic yard, measured in scows. Excavating boulders, \$16 per cubic yard.	39,583 98	112,180 54	112,320 00
Completed March 26, 1921.	Dredging, 47.9 cents per cubic yard, scow measurement.	12,499 03	12,499 03	12,100 00
Completed April 27, 1921.	For furnishing stone and depositing it in place, \$5.80 per ton.	21,527 98	21,527 98	15,000 00
In progress . . .	For constructing new wall, \$11 per cubic yard of concrete measured in completed work. For constructing concrete footings under existing wall, \$4 for each linear foot of completed footing. For excavating, placing and grading of material, \$1 per cubic yard of material measured in place before excavating.	5,840 71	5,840 71	13,375 00
Completed Oct. 7, 1921.	For furnishing materials and constructing main wall and steps, \$12.50 for each cubic yard of concrete measured in completed work. For furnishing materials and constructing each spur jetty, \$150 for each complete jetty 25 feet in length. For furnishing material and constructing concrete slab and cut-off wall at Marshfield Avenue, \$400 for completed work.	55,564 75	55,564 75	54,800 00
In progress . . .	Dredging areas at East Boston and depositing material, 32.94 cents per cubic yard. Dredging and depositing material brought from other portions of harbor, 22 cents per cubic yard.	221,674 25	221,674 25	351,400 00
Completed Aug. 26, 1921.	For building bulkhead with one spur shore, \$21.44 per lineal foot. For building bulkhead with two spur shores, \$22.44 per lineal foot.	56,157 08	56,157 08	56,000 00
{ Completed, Wild Harbor, July 29, 1921; Witchmere, Oct. 23, 1921; Herring River, Sept. 17, 1921; Oak Bluffs sea wall, Oct. 23, 1921; Fal- mouth Inner Harbor, Nov. 9, 1921. Work in progress in other locali- ties.	{ Unit prices . . . . .	4,195 52	4,195 52	4,420 00
		-	-	7,425 00
		-	-	7,950 00 <sup>1</sup>
		-	-	1,435 00 <sup>2</sup>
		467 50	467 50	550 00
		5,470 19	5,470 19	6,975 00
		7,539 72 <sup>1</sup>	7,539 72 <sup>1</sup>	7,570 00 <sup>1</sup>
		-	-	5,100 00 <sup>3</sup>
		6,765 39 <sup>1</sup>	6,765 39 <sup>1</sup>	8,200 00 <sup>1</sup>
		-	-	2,250 00 <sup>4</sup>
		-	-	9,752 50
		-	-	5,964 00
			\$24,438 32	\$67,591 50

<sup>1</sup> Dredging.<sup>2</sup> Jetty repairs.<sup>3</sup> Riprap.<sup>4</sup> Removing boulders.



CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION  
YEAR ENDING

Contract No.	WORK.	Contractor.	Date.
27	Commonwealth Pier No. 5, South Boston, coal for heating plant.	Metropolitan Coal Company .	June 15, 1921
28	Battery Wharf, dredging opposite .	Bay State Dredging and Contracting Company.	June 22, 1921
29	Fish Pier, South Boston, repaving a portion.	B. E. Grant Company . . .	July 28, 1921
30	Wollaston Beach, dredging . . .	W. S. Rendle . . . . .	Aug. 1, 1921
31	Cottage Park, Winthrop, dredging .	Bay State Dredging and Contracting Company.	Aug. 30, 1921
32	Old Harbor, South Boston, dredging	Bay State Dredging and Contracting Company.	Aug. 30, 1921
34	Wild Harbor, Falmouth, and Nobscusset Harbor, Dennis, break-water extension and repair.	Calvin G. Fletcher . . . .	Aug. 15, 1921
36	Fresh Water Cove, Gloucester, dredging.	Bay State Dredging and Contracting Company.	Aug. 15, 1921
37	Falmouth Inner Harbor, extending west jetty.	Bay State Dredging and Contracting Company.	Sept. 6, 1921
38	Bullock Street extension and Cypher Street paving.	B. E. Grant Company . . .	Aug. 30, 1921
39	East Boston bulkhead . . . .	William L. Miller Company .	Sept. 14, 1921
40	Taunton River, dredging . . .	Bay State Dredging and Contracting Company.	Nov. 3, 1921
41	Oak Bluffs sea wall and Witchmere Harbor jetty, riprap protection.	T. A. Scott Company, Inc. .	Nov. 18, 1921

OF WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE  
Nov. 30, 1921—*Concluded.*

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1921.	Total paid to Nov. 30, 1921.	Estimated Amount of Contract.
Completed . .	\$8.42 per gross ton . . . . .	\$10,688 71	\$10,688 71	-
Completed Aug. 30, 1921.	Dredging between harbor line and main ship channel, 55 cents per cubic yard, scow measurement. Dredging in dock, 50 cents per cubic yard, scow measurement. Removing boulders, \$20 per cubic yard.	13,859 35	13,859 35	\$12,420 00
Completed Sept. 27, 1921.	Unit prices . . . . .	27,182 73	27,182 73	24,431 00
Completed Nov. 26, 1921.	Dredging, 42.5 cents per cubic yard, scow measurement. Removing boulders, \$3 per cubic yard.	12,796 20	12,796 20	12,962 50
Completed Oct. 17, 1921.	Dredging, 51 cents per cubic yard. Removing boulders, \$15 per cubic yard.	10,073 67	10,073 67	12,469 20
Completed Oct. 14, 1921.	Dredging, 53 cents per cubic yard, scow measurement. Removing boulders, \$15 per cubic yard.	9,277 12	9,277 12	7,435 00
Completed Nov. 27, 1921.	For furnishing and depositing stone in breakwater at Nobscusset Harbor, \$6 per ton.	4,868 50	4,868 50	} 16,800 00
	For furnishing stone and constructing extension to breakwater at Wild Harbor, \$6 per ton.	9,623 77	9,623 77	
Completed Sept. 22, 1921.	Dredging, 50 cents per cubic yard, scow measurement. Removing boulders, \$12 per cubic yard.	15,477 72	15,477 72	11,100 00
Completed Oct. 1, 1921.	For furnishing and placing stone riprap and chips, \$3.85 per ton.	16,880 33	16,880 33	15,400 00
In progress . .	Unit prices . . . . .	24,968 75	24,968 75	61,055 65
In progress . .	\$27.71 for each linear foot of completed bulkhead.	32,750 50	32,750 50	52,649 00
In progress . .	Dredging, 72 cents per cubic yard, scow measurement. Removing boulders, \$22 per cubic yard.	2,512 46	2,512 46	23,040 00
In progress . .	For furnishing and placing stone chips and riprap at Oak Bluffs, \$6.45 per ton. For furnishing and placing stone chips at Witchmere Harbor, \$6.95 per ton.	-	-	8,535 00





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The Commonwealth of Massachusetts

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ANNUAL REPORT

OF THE

DEPARTMENT OF PUBLIC WORKS

FOR THE

YEAR ENDING NOVEMBER 30, 1922



PUBLICATION OF THIS DOCUMENT

APPROVED BY THE

COMMISSION ON ADMINISTRATION AND FINANCE

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## The Commonwealth of Massachusetts

### DEPARTMENT OF PUBLIC WORKS.

*To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts.*

Pursuant to the provisions of law the third annual report of the Department of Public Works for the fiscal year ending Nov. 30, 1922, is submitted.

The organization of the Department in two divisions is set forth in chapter 16<sup>1</sup> of the General Laws. Section 6 of said chapter was amended by section 2 of chapter 534 of the Acts of 1922, as follows:—

Except as otherwise provided by sections thirty-one and fifty-eight of chapter ninety and section sixty of chapter one hundred and forty, all rules and regulations within the jurisdiction of the division of highways or the division of waterways and public lands shall be drafted by the associate commissioners having charge of said division, shall be submitted to the commissioner and associate commissioners sitting as a board, and shall take effect when approved by them, and at such time as they shall designate. Said board shall also have power to make all needful rules and regulations for carrying out the provisions of law relating to the department.

The personnel during the year ending Nov. 30, 1922, was as follows:—

Commissioner of Public Works, JOHN N. COLE.<sup>2</sup>

#### *Division of Highways.*

Associate Commissioner, FRANK D. KEMP.<sup>3</sup>

Associate Commissioner, JAMES W. SYNAN.

Associate Commissioner, FRANK E. LYMAN.<sup>4</sup>

#### *Division of Waterways and Public Lands.*

Associate Commissioner, JESSE B. BAXTER.

Associate Commissioner, RICHARD K. HALE.

Executive Secretary for the Department, FREDERICK N. WALES.

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<sup>1</sup> Printed in the report for 1921, page 3.

<sup>2</sup> Died Oct. 18, 1922.

<sup>3</sup> Resigned June 14, 1922.

<sup>4</sup> Appointed June 14, 1922.



*Division of Highways.*

Chief Engineer, ARTHUR W. DEAN.

Construction Engineer, FRANKLIN C. PILLSBURY.

District Engineers: —

District No. 1, Berkshire County, GEORGE A. CURTIS.

District No. 2,<sup>1</sup> Franklin, Hampshire and Hampden counties, H. D. PHILLIPS.

District No. 3,<sup>2</sup> Hampden and Worcester counties, JOHN A. JOHNSTON.

District No. 4, Middlesex County, F. D. SABIN.

District No. 5, Essex and Suffolk counties, D. H. DICKINSON.

District No. 6, Norfolk and Bristol counties, R. W. COBURN.

District No. 7, Plymouth, Barnstable, Dukes and Nantucket counties, GEORGE H. DELANO.

Recording Secretary for the Division, MARY A. RILEY.

Financial Secretary for the Division, FRED FAIR.

*Division of Waterways and Public Lands.*

Chief Engineer, FRANK W. HODGDON.

Assistant to the Chief Engineer, for Boston Harbor, JOHN N. FERGUSON.

Assistant to the Chief Engineer, for harbors and waterways outside Boston Harbor, FRANCIS L. SELLEW.

Recording Secretary for the Division, EDNA F. TOWNSEND.

Financial Secretary for the Division, CORA I. ALLEN.

Bridge Engineer for the Department, WILLIAM F. WILLIAMS.

*Registry of Motor Vehicles.*

Registrar, FRANK A. GOODWIN.

Chief Clerk, CHARLES R. GILLEY.

Chief of Inspection Force, ALBERT S. OLSSON.

A detailed report is presented herewith, covering the activities for the year of the Division of Highways, the Division of Waterways and Public Lands, and the Registry of Motor Vehicles.

FREDERICK N. WALES,  
*Acting Commissioner of Public Works.*

DEC. 1, 1922.

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<sup>1</sup> With the exception of five towns, which are included in District No. 3.

<sup>2</sup> Including Brimfield, Holland, Monson, Palmer and Wales, those remaining being in District No. 2.

## DIVISION OF HIGHWAYS.

## APPROPRIATIONS.

Chapter 129, Acts of 1922, making appropriations for the maintenance of departments, boards, commissions, institutions and certain activities of the Commonwealth, etc., is, in part, as follows:—

*Service of the Department of Public Works.*

Item

623	For the salaries of the commissioner and the four associate commissioners, a sum not exceeding thirty-one thousand five hundred dollars . . . . .	\$31,500 00
624	For personal services of clerks and assistants to the commissioner, a sum not exceeding twelve thousand six hundred dollars . . . . .	12,600 00
625	For traveling expenses of the commissioner, a sum not exceeding fifteen hundred dollars . . . . .	1,500 00
	Total . . . . .	<u>\$45,600 00</u>

Division of Highways (the following appropriations for the operation and maintenance of this division, except as otherwise provided, are made from the receipts in the Motor Vehicle Fees Fund):

626	For the personal services of the chief engineer, engineers and office assistants, including certain clerks and stenographers, a sum not exceeding fifty-four thousand five hundred dollars . . . . .	\$54,500 00
627	For traveling expenses of the associate commissioners, when traveling in the discharge of their official duties, a sum not exceeding twenty-five hundred dollars . . . . .	2,500 00
628	For services other than personal, including printing the annual report and necessary office supplies and equipment, a sum not exceeding thirteen thousand five hundred dollars . . . . .	13,500 00
629	For the care, repair and storage, replacement and purchase of road-building machinery and tools, a sum not exceeding three hundred fifty thousand dollars . . . . .	350,000 00
630	For the suppression of gypsy and brown tail moths on state highways, a sum not exceeding fifteen thousand dollars . . . . .	15,000 00
631	For the construction and repair of town and county ways, a sum not exceeding six hundred seventy-five thousand dollars . . . . .	675,000 00
632	For aiding towns in the repair and improvement of public ways, a sum not exceeding five hundred twenty-five thousand dollars . . . . .	525,000 00
633	For the maintenance and repair of state highways, a sum not exceeding two million two hundred thousand dollars, of which sum three hundred seventy-two thousand three hundred forty-nine dollars and thirty-seven cents represents the receipts from assessments upon certain cities and towns for the maintenance of state highways, and the balance from receipts in the Motor Vehicle Fees Fund . . . . .	2,200,000 00

Item

634	For the maintenance and operation of the Newburyport bridge and the Brightman street bridge in Fall River, in accordance with the provisions of existing laws, a sum not exceeding twenty thousand dollars . . . . .	\$20,000 00
	Total . . . . .	\$3,855,500 00

## Registration of Motor Vehicles:

635	For personal services, a sum not exceeding three hundred forty-five thousand dollars, from receipts in the Motor Vehicle Fees Fund . . . . .	\$345,000 00
636	For services other than personal, including traveling expenses, purchase of necessary supplies, equipment and materials, including cartage and storage of the same, and for work incidental to the registration and licensing of owners of motor vehicles, a sum not exceeding three hundred nine thousand dollars from receipts in the Motor Vehicle Fees Fund . . . . .	309,000 00
	Total . . . . .	\$654,000 00

## State Highways:

637	For the purpose of enabling the department of public works to secure federal aid for the construction of highways, a sum not exceeding one million eight hundred thousand dollars in addition to any other funds which the department has available for the purpose. Of the said sum one million five hundred thousand dollars shall be payable from receipts in the Motor Vehicle Fees Fund, and the balance from receipts from counties for assessments on highways previously constructed, or from the general fund . . . . .	\$1,800,000 00
638	For the care of snow on highways, as provided by section eleven of chapter eighty-four of the General Laws, a sum not exceeding fifty thousand dollars, from receipts in the Motor Vehicle Fees Fund . . . . .	50,000 00

## Advertising signs:

639	For administering the law relative to advertising signs near highways, a sum not exceeding fifteen thousand dollars, to be paid from the general fund . . . . .	15,000 00
	Total . . . . .	\$1,865,000 00

## Special Improvement:

640	For completing the construction of certain highways in the five western counties, as authorized by and subject to the conditions of chapter five hundred and seventy-two of the acts of nineteen hundred and twenty, a sum not exceeding six hundred thousand dollars, the same to be in addition to any sum heretofore appropriated for the purpose . . . . .	\$600,000 00
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## Division of Waterways and Public Lands:

641	For personal services of the chief engineer and assistants, a sum not exceeding fifty-two thousand dollars . . . . .	52,000 00
642	For necessary traveling expenses of the associate commissioners, a sum not exceeding one thousand dollars . . . . .	1,000 00
643	For services other than personal, including printing and binding the annual report, and for necessary office and engineering supplies and equipment, a sum not exceeding six thousand dollars . . . . .	6,000 00



## Item

644	For the care and maintenance of the province lands, a sum not exceeding five thousand dollars . . . . .	\$5,000 00
645	For the maintenance of structures, and for repairing damages along the coast line or river banks of the commonwealth, and for the removal of wrecks and other obstructions from tide-waters and great ponds, a sum not exceeding twenty-five thousand dollars . . . . .	25,000 00
646	For the improvement, development and protection of rivers and harbors, tidewaters and foreshores within the commonwealth as provided by chapter two hundred and thirty-one of the General Acts of nineteen hundred and nineteen, and of great ponds, a sum not exceeding two hundred fifty thousand dollars . . . . .	250,000 00
647	For re-establishing and permanently marking certain triangular points and sections, as required by order of the land court in accordance with section thirty-three of chapter ninety-one of the General Laws, a sum not exceeding one thousand dollars . . . . .	1,000 00
648	For the supervision and operation of commonwealth pier five, including the salaries or other compensation of employees, and for the repair and replacement of equipment and other property, a sum not exceeding eighty-eight thousand dollars . . . . .	88,000 00
649	For the maintenance of pier one, at East Boston, a sum not exceeding eleven thousand dollars . . . . .	11,000 00
650	For the maintenance and improvement of commonwealth property under the control of the division, a sum not exceeding fifty thousand dollars . . . . .	50,000 00
651	For the operation and maintenance of the New Bedford state pier, a sum not exceeding six thousand dollars . . . . .	6,000 00
652	For the compensation of dumping inspectors, a sum not exceeding three thousand dollars, to be paid from the Waterways Fund . . . . .	3,000 00
653	For the inspection of state monuments, a sum not exceeding nine hundred twenty-one dollars and thirty-eight cents . . . . .	921 38
654	For continuing the work in gauging the flow of water in the streams of the commonwealth, a sum not exceeding three thousand dollars . . . . .	3,000 00
	Total . . . . .	<hr/> \$501,921 38
655	For expenses on account of the dry dock arbitration board, a sum not exceeding twenty-two hundred and fifty dollars, to be paid from the port of Boston receipts . . . . .	\$2,250 00
656	For expenses of dredging channels and filling marsh lands, a sum not exceeding three hundred thousand dollars, to be paid from the port of Boston receipts or ordinary revenue . . . . .	300,000 00
657	For the extension of the East Boston bulkhead, a sum not exceeding one hundred thousand dollars, to be paid from the port of Boston receipts . . . . .	100,000 00
658	For dredging minor channels in Boston harbor, a sum not exceeding fifty thousand dollars, to be paid from the port of Boston receipts . . . . .	50,000 00
659	For making rail connections in East Boston, a sum not exceeding eighty thousand dollars, the same to be in addition to any amount heretofore appropriated for the purpose and to be paid from the port of Boston receipts . . . . .	80,000 00
	Total . . . . .	<hr/> \$532,250 00

## DEFICIENCIES.

For deficiencies in certain appropriations of previous years, in certain items, as follows:

*Department of Public Works.*

## Division of Waterways and Public Lands:

For the supervision and operation of commonwealth pier five, the sum of one hundred sixty-two dollars and twenty cents .	\$162 20
For railroad track connections and certain roadways at South Boston, the sum of one hundred thirty-one thousand dollars	131,000 00
For certain improvements at Hayward's creek, the sum of thirty thousand five hundred ninety-six dollars and twenty-two cents . . . . .	30,596 22

Chapter 546, Acts of 1922, in addition to the general appropriation act making appropriations to supplement certain items contained therein, and for certain new activities and projects is, in part, as follows: —

## Item

148½ For certain improvements at the Massachusetts Soldiers' Home, as authorized by chapter twenty-eight of the resolves of the present year, a sum not exceeding fifteen thousand dollars .	\$15,000 00
--	-------------

*Claims.*

Payments for certain claims authorized by the following appropriations shall be certified by the auditor of the commonwealth only upon the filing of satisfactory releases or other evidence that the payments are accepted in full compensation on the part of the commonwealth in respect thereto:

235h For Albert B. Leighton of Westborough, for injuries sustained on November twentieth, nineteen hundred and twenty-one, by being struck by an automobile truck operated by an employee of the department of public works of the commonwealth, the sum of three hundred dollars . . . . .	\$300 00
---	----------

*Service of the Department of Public Works.*

## Registration of Motor Vehicles:

635 For personal services, a sum not exceeding two thousand dollars, from receipts in the Motor Vehicle Fees Fund, same to be in addition to any amount heretofore appropriated for the purpose . . . . .	\$2,000 00
636 For services other than personal, including traveling expenses, purchase of necessary supplies, equipment and materials, including cartage and storage of the same and for work incidental to the registration and licensing of owners of motor vehicles, a sum not exceeding two thousand dollars, from receipts in the Motor Vehicle Fees Fund, same to be in addition to any amount heretofore appropriated for the purpose . . . . .	2,000 00

## Item

## Division of Waterways and Public Lands:

648	For the supervision and operation of commonwealth pier five, including the salaries or other compensation of employees, and for the repair and replacement of equipment and other property, a sum not exceeding fifteen thousand five hundred dollars, the same to be in addition to any amount heretofore appropriated for the purpose . . . . .	\$15,500 00
656	For expenses of dredging channels and filling marsh lands, a sum not exceeding thirty-five thousand dollars, as authorized by chapter four hundred and four of the acts of the present year, to be paid from the port of Boston receipts or ordinary revenue, the same to be in addition to any amount heretofore appropriated for the purpose . . . . .	35,000 00
	Total . . . . .	\$54,500 00

## DEFICIENCIES.

For deficiencies in certain appropriations of previous years, in certain items, as follows:

*Department of Public Works.*

## Division of Highways:

For the maintenance and repair of state highways, the sum of two hundred seventy-eight dollars and eighty-nine cents . . . . .	\$278 89
--	----------

## EXPENDITURES.

Summary of expenditures by the Division during the fiscal year ending Nov. 30, 1922: —

For construction of State highways, under chapter 81 of the General Laws . . . . .	\$2,883,592 54
For maintenance of State highways, under section 13, chapter 81 of the General Laws . . . . .	1,963,097 86
For construction and repair of town and county ways, under section 34, chapter 90 of the General Laws as amended . . . . .	738,809 44
For construction and repair of ways in certain towns, under section 23, chapter 81 of the General Laws . . . . .	13,731 59
For highways in the five western counties, under chapter 221, General Acts of 1915 . . . . .	246,253 20
For aiding towns in the repair and improvement of public ways, under section 26, chapter 81 of the General Laws as amended . . . . .	501,538 97
For the construction of a State highway in Hingham, under chapter 213, General Acts of 1916, and chapter 138, Acts of 1921 . . . . .	80,166 27
For the construction of a highway in Chester, Middlefield, Peru and Hinsdale, under chapter 566, Acts of 1920 . . . . .	42,641 87
For the construction of a highway in Blandford, Otis, Monterey and Great Barrington, under chapter 571, Acts of 1920 . . . . .	7,900 53



For the construction and improvement of a highway in the town of Holden, under chapter 521, Acts of 1920 . . . . .	\$20,307 81
For the construction and improvement of a highway in the towns of Hubbardston and Rutland, under chapter 337, General Acts of 1919 . . . . .	352 90
For the construction of a highway in the city of Chelsea, under chapter 28, Resolves of 1922 . . . . .	13 39
For the care of snow on highways, under chapter 129, Acts of 1922, item 638 . . . . .	43,420 15
For administering the law relative to advertising signs near highways, under chapter 129, Acts of 1922, item 639 . . . . .	11,272 62
For the maintenance and operation of the bridge over Merrimack River between Newburyport and Salisbury, under chapter 716, Acts of 1912, and chapter 129, Acts of 1922, item 634 . . . . .	8,465 94
For the maintenance and operation of the bridge over Taunton Great River at Brightman Street in Fall River, under chapter 717, Acts of 1912, and chapter 129, Acts of 1922, item 634 . . . . .	13,988 90
For the care, repair and storage, replacement and purchase of road building machinery and tools, under chapter 129, Acts of 1922, item 629 . . . . .	349,731 16
For the suppression of gypsy and brown-tail moths on State highways, under chapter 129, Acts of 1922, item 630 . . . . .	14,622 99
For general expenses under chapter 129, Acts of 1922, items 626, 627, 628 . . . . .	68,963 48
Total . . . . .	\$7,008,871 61

#### CO-OPERATIVE WORK — SUPERVISION OF EXPENDITURES.

The Division has supervised the expenditures during the year by cities, towns and counties, under section 26 of chapter 81 of the General Laws, as amended by section 1 of chapter 120 of the Acts of 1921 and chapter 281<sup>1</sup> of the Acts of 1922, and under section 34 of chapter 90 of the General Laws, as amended by section 1 of chapter 112 of the Acts of 1921, of approximately \$1,294,126.45 for co-operative work, in repairing, maintaining and improving certain public ways, and for other road work for which the towns and cities made contributions. All such work was carried out in conformity with contracts, specifications and plans approved by the Division.

<sup>1</sup> See pages 57, 58 of this report.

## PETITIONS, MEETINGS AND HEARINGS.

In addition to the regular weekly meetings of the Division throughout the year, numerous hearings and conferences have been held, including the annual meeting and hearing in the several counties in the Commonwealth, for the open discussion of questions relative to the public ways, as required by section 1 of chapter 81 of the General Laws; hearings on petitions for the relocation of street railway tracks in Methuen, Dracut, Boston, Andover, Haverhill and Merrimac; appeals from the action taken by the registrar of motor vehicles in the suspension or revocation of certain licenses to operate motor vehicles; and on the matter of outdoor advertising.

Petitions were received and contracts signed during the year, as follows:—

	Petitions.	Contracts.
State highways . . . . .	8	24
Work under section 34, chapter 90, General Laws, as amended	73	126
Work under section 26, chapter 81, General Laws, as amended	130	163
Work under section 23, chapter 81, General Laws . . . .	—	1
Work under special acts . . . . .	—	6
Totals . . . . .	211	320

## GENERAL STATEMENT AS TO SURVEYS, PLANS, ESTIMATES AND OTHER WORK DURING THE YEAR.

*State Highways.*—During the year ending Nov. 30, 1922, the Division completed work on about 35.7 miles of State highway, portions of which were laid out in 1921. Construction was commenced, but not completed, on over 7 miles of road in 7 cities and towns. Layouts were made of 53.128 miles of State highway in 29 cities and towns. Under chapter 81 of the General Laws, as amended by chapter 427, Acts of 1921, 6.555 miles of State highway were discontinued. The total length of State highways at the end of the year was 1,440.121 miles.

*Surveys, Estimates and Designs.*—During the year preliminary surveys, plans and estimates were made on contemplated State highways in 23 towns covering a distance of



63 miles. Surveys, plans and estimates were made for resurfacing or reconstruction in 32 towns covering a distance of 49.02 miles. Lines and grades for construction work on State highways were made in 13 towns covering a distance of 49.82 miles, and for resurfacing and reconstruction in 13 towns for a distance of 16.24 miles. Final surveys were made on completed State highways in 22 towns for a distance of 47.42 miles, for resurfacing or reconstruction in 8 towns for a distance of 16.40 miles, and on roads other than State highways in 27 towns for a distance of 28.85 miles. Under section 23 of chapter 81 of the General Laws and section 34 of chapter 90 of the General Laws, as amended, and for roads to be constructed by the towns, surveys, plans and estimates have been made in 98 towns for a distance of 88.93 miles.

Lines and grades for construction have been made in 92 towns for a distance of 71.40 miles.

Under chapter 221, General Acts of 1915, and for work under special acts, surveys, plans and estimates have been made in 20 towns for a distance of 43.88 miles, and lines and grades for construction have been made in 8 towns for a distance of 13 miles.

Layout plans have been made in 29 towns, covering a distance of 53.128 miles.

Plans to accompany decrees for street railway locations on State highways have been made in 2 towns.

*Roads constructed in 1922.* — Construction has been completed on 35.70 miles of State highway, 7.05 miles of highways under the provisions of section 23 of chapter 81 of the General Laws, 90.79 miles of highways under the provisions of section 34 of chapter 90 of the General Laws, as amended, and 9.46 miles of highways under the provisions of special acts, making a total of 143 miles completed during the year.

Of the above roads completed this year, .87 of a mile was of water-bound macadam; 28.40 miles were of gravel; 6.71 miles were of bituminous concrete; 77.93 miles were of bituminous macadam; 2.28 miles were of water-bound macadam with an oil or tar surface applied; 15.46 miles were of reinforced concrete; 7.01 miles were of gravel with an oil surface applied, and 2.34 miles were earth roads, that is, surfaced with the best available material.



*Resurfacing and Widening.* — During the year 1.67 miles of State highway were widened but not resurfaced, and 10.65 miles were resurfaced and widened. These figures are for completed work. There is uncompleted work in various stages on a number of miles of road where the work will be completed next year.

*Permits.* — There were 1,391 permits issued during the year for opening or occupying State highways for various purposes.

*Trees on State Highways.* — During the last eighteen years 46,048 trees have been planted on the borders of State highways, of which 441 were planted this year, the Division continuing its policy of planting quick-growing trees and hedges to replace guard rails.

*Engineering Advice to Municipal Authorities.* — The Division furnished, without charge, engineering advice to 24 cities and towns in accordance with the provisions of section 1 of chapter 81 of the General Laws.

#### FIVE-YEAR PROGRAM FOR HIGHWAY WORK.

In addition to the constantly increasing demand for better roads and more of them, the Division is confronted with a maintenance problem which is growing to such an extent that it is believed a radical change in policy or practice should be adopted to accomplish an increased rate of reconstruction to new construction during the next few years.

Of the 1,440 miles of State highway now under maintenance, nearly one-half was built more than ten years ago, and some have been built over twenty years. There are at present 586 miles of State highway which are surfaced with waterbound macadam, gravel, dirt or a sand-clay mixture. In addition to the above, there are at least 100 miles of State highway that are inadequate for modern traffic.

These old roads are under a constantly increasing cost for maintenance, and they should be reconstructed as soon as possible, not only to meet modern requirements, but also to terminate this excessive annual cost which adds nothing of permanence to the road and must be repeated year after year at a constantly increasing rate.

It must not be assumed, however, that the reconstruction of

all of these old roads will entirely eliminate the annual expenditures for maintenance of State highways, as there will always be the necessary repairs due to wearing out of surfaces, and there will be the expense of maintaining the roadsides, including shoulders, ditches, slopes, shade trees and the upkeep and care of the drainage.

Furthermore, it cannot be too forcibly expressed that surfaces and foundations of all State highways should be sufficiently strong to carry reasonable loads at all seasons of the year, and motor vehicle users, who now pay nearly all of the State road expenses, are justified in expecting and demanding that this condition should be brought about.

It is not the opinion of the Division that expansion of the State highway system and the construction of new roads in co-operation with counties and towns should cease or even be curtailed, but unless additional funds are provided, the construction of new roads should be restricted until the reconstruction of the old surfaces can be accomplished.

Under the so-called Federal Aid Acts the Commonwealth will of necessity continue with the construction of over 100 miles of road in order to effect the completion of the required "7 per cent" system. In addition to the requirements of the Federal Aid system there are several miles of new roads that should be built in order to complete certain gaps on important main routes.

Co-operation by the State with counties and towns (General Laws, chapter 90) in the improvement of town ways is of extreme importance, as evidenced by the results accomplished in the last few years. Any program for future work should give full and adequate consideration to this phase of the work of the Division, and the allotments by the Division for this class of work should be increased to meet the demands and necessities of the counties and towns. Attention is called to the fact that every dollar expended by the State on co-operative work means that one or more dollars are expended by the counties and towns upon roads that are important feeders to the highway system, and hence may be considered as an integral part of the same.

Co-operation by the State with towns having a valuation under \$3,000,000 (chapter 81, General Laws) has also proved



an important work of the Division, and the number of towns taking advantage of this provision of the law is increasing to such an extent that it is anticipated that nearly all eligible towns will request assistance during the coming year. By preparing what might be called a "maintenance budget" in towns in which work is done under this law, and by increasing the competency of local men engaged in this work, the money will be economically expended where it is most needed. The improved condition of the ways in these towns will, in a few years, furnish conclusive proof that this State co-operation is advisable, and that the legislation and appropriations are more than justified.

It is also believed and strongly urged by the Division that much more attention should be given to the reconstruction of bridges under a co-operative plan that will assist the towns in carrying the heavy financial burdens imposed by this situation. At present, the most pronounced of the weak links in the chain of good roads in the State are the many minor bridges on the main and secondary roads that are not adequate to carry modern loads. It should also be stated at this time that while many of these bridges are on State highways they were not taken over by the State and are still maintained by the towns. An examination of some of these bridges shows that they are theoretically insufficient in strength to withstand a load of more than 6 tons, and while only a few have actually broken down, it is almost miraculous that there have not been many more failures. In many localities the drivers of motor vehicles carrying legally limited loads on important roads are obliged to drive over roundabout routes in order to avoid unsafe bridges.

The reconstruction of all of the minor bridges in the State that are inadequate in strength or width involves a very large expenditure of money. Therefore a definite and comprehensive program for strengthening or rebuilding these bridges should be adopted and the work commenced at once. Many towns are financially unable to carry on this reconstruction to meet the present requirements of traffic, hence the State might consistently aid the towns on these minor bridges, leaving the construction of major bridges to the counties and municipalities, as in the past.

The Division does not consider that the funds derived from



motor vehicle fees and licenses are anywhere near sufficient to carry on the work of the Division as herein outlined, and it therefore believes that additional funds should be raised by whatever method the Legislature may determine.

Realizing fully the highway necessities of the State, and believing that the problem should be broadly considered so as to cover a period of years, the Division has mapped out a tentative five-year program which provides not only for the reconstruction of a very large portion of the old State highways, but also for additions to this system where necessity demands, including also the co-operative work with counties and towns as in the past, together with provision for co-operation in the strengthening and rebuilding of minor bridges.

Previous to 1919 appropriations for State highway construction were made on a five-year basis, designating the amount that would become available during each of the five years following the year in which the appropriation was made. The appropriations for State highway reconstruction, however, have been made annually, thereby causing serious handicap to an orderly and systematic expenditure of funds. Under the present system, appropriations are made about the first of April, leaving only eight months in each year for the expenditure of large sums of money. This is not an economical way of doing business, and often leads to such haste that projects are not as thoroughly studied as they should be, and expensive work is sometimes done which could have been avoided had there been more time for the preliminary study of the projects before contracts were awarded.

It has been very clearly seen that if contracts could be prepared, and either let in the late months of the year or in the early spring of the following year, contractors would be enabled to so arrange their plans and organization that the work could be done by them at a considerable saving in time and cost, which will revert to the benefit of the State. At the present time the Division has on file all the data necessary for contracting several projects, but under existing laws they cannot be let for construction until the appropriations for 1923 are made. Under these conditions it is necessary to place a short-time limit on the prosecution of the work, which should result in higher prices on the very natural assumption that proposals

would only be received from those contractors who have the equipment and organization to complete the work within the time fixed by the contract. But, as a matter of fact, it too often results in a low bidder who is not well informed or properly equipped to carry out the terms of the contract, and the work is not only seriously delayed, but the contractor suffers a heavy financial loss. It might be said that the remedy for this situation is to not award the contract to the lowest bidder, but the adoption of such a policy would destroy the present system of competitive bidding, which, notwithstanding its defects, is the only safe and impartial method for the Division to adopt in awarding the many contracts required to carry on its work.

The table which follows is an estimate of the annual receipts and disbursements, based largely upon an assumed registration of motor vehicles which, if correct, will enable the Division to carry out a five-year program that will accomplish the results outlined in this report. It is assumed, as shown by the first column, that the registration of motor cars will continue to increase in the ratio established during the last two years, for the next five or six years, and the estimated net receipts from motor vehicles is based upon this assumption.

The receipts from the Federal Aid are quite definitely fixed by the terms of the law and will not vary much from the figures given.

The assessments from counties for construction, and from cities and towns for maintenance of State highways, are assumed at a fixed figure each year on the basis of a uniform plan of new construction and maintenance.

The amount estimated to meet the additional funds required to finance the program is based upon the registration of motor vehicles and is equivalent to \$4.50 per car.

The estimated disbursements for bridge construction are arbitrarily fixed at an ascending rate that it is assumed will provide for the most urgent cases during the next five years.

The estimated cost of county and town roads under chapters 90 and 81, together with the maintenance of State highways, is then provided for, and the balance becomes available for the reconstruction and new construction of State highways as shown in column 9 of the table.

The last column gives the number of miles of new construction and reconstruction of State highways that can be accomplished under this program, and indicates that about 50 miles of old roads can be reconstructed without a reduction in the past average annual construction of new roads.



## HIGHWAY PROGRAM.

*Estimated Receipts and Disbursements for a Period of Five Years.*

YEAR.	1	2	3	4	5	6	7	8	9	10
	Number of Cars registered.	Net Receipts from Registration.	Additional Funds at \$4.50 per registered Car.	Federal Aid available.	Maintenance and Construction Assessments.	Totals of Columns 2, 3, 4 and 5.	Proposed Bridge Construction.	Miscellaneous Expenditures. <sup>1</sup>	Available for Construction and Resurfacing State Highways.	Miles of Road can be built.
1923 . . . . .	538,731	\$6,284,091	\$2,424,290	\$1,541,500	\$1,175,000	\$11,424,881	\$500,000	\$4,486,000	\$6,438,881	129
1924 . . . . .	614,166	7,331,439	2,763,747	1,516,250	1,175,000	12,786,436	1,000,000	4,251,000	7,535,436	151
1925 . . . . .	689,601	8,378,788	3,103,205	1,382,500	1,175,000	14,039,492	1,500,000	4,418,000	8,121,492	162
1926 . . . . .	765,036	9,426,136	3,442,662	1,350,000	1,175,000	15,393,798	2,000,000	4,321,000	9,072,798	182
1927 . . . . .	840,471	10,473,485	3,782,120	1,350,000	1,175,000	16,780,604	2,500,000	4,244,250	10,036,354	201

<sup>1</sup> Include: ordinary maintenance, western counties, care of snow, maintenance of draw bridges, machinery, chapter 90, section 34, chapter 81, section 26, overhead, engineering, trees and moths.

## STATE HIGHWAYS.

General Laws, chapter 81, section 4, provides that —

If county commissioners, aldermen or selectmen adjudge that public necessity and convenience require that the commonwealth lay out and take charge of a new or existing way as a highway in whole or in part, in their county, city or town, they may apply, by a written petition, to the division, requesting that said way be laid out and taken charge of by the commonwealth.

Petitions under the aforesaid section have been received during the year, as follows: —

COUNTY COMMISSIONERS OF ESSEX COUNTY. — Road extending from the boundary between the towns of Topsfield and Ipswich, through the towns of Ipswich, Rowley and Newbury to the boundary between the town of Newbury and the city of Newburyport, locally known as the Newburyport Turnpike. Received April 11, 1922.

SELECTMEN OF SOUTHWICK. — Road extending from the boundary between the city of Westfield and the town of Southwick, through Southwick, to the boundary between the town of Southwick and the town of Granby in the State of Connecticut. Received May 23, 1922.

SELECTMEN OF GREAT BARRINGTON. — Section of road in Great Barrington, extending from the boundary between the towns of Egremont and Great Barrington to a point at or near the railroad crossing on Main Street. Received July 26, 1922.

SELECTMEN OF DALTON. — Section of road locally known as Water Street, extending from the existing State highway on Water Street to the boundary between the towns of Dalton and Hinsdale. Received July 26, 1922.

SELECTMEN OF DALTON. — Section of road locally known as North Street, extending from the existing State highway, at its junction with North Street, to the boundary between the towns of Dalton and Windsor. Received July 26, 1922.

SELECTMEN OF WEST BOYLSTON. — Section of road locally known as Lancaster Street, extending from the boundary between the towns of Sterling and West Boylston to the junction of Lancaster and Sterling streets. Received Aug. 29, 1922.

SELECTMEN OF STERLING. — Section of road locally known as Lancaster Street, extending from the boundary between the towns of Clinton and Sterling to the boundary between the towns of Sterling and West Boylston. Received Aug. 29, 1922.

SELECTMEN OF BELLINGHAM. — Road beginning at Crooke's Corner in Bellingham, and extending northerly along South Main Street to Bellingham Center; thence northerly along North Main Street to the Hartford Turnpike. Received Nov. 24, 1922.

## CONSTRUCTION AND RESURFACING OF STATE HIGHWAYS.

(Chapter 81, General Laws.)

The following contracts were entered into during the year for the construction and resurfacing of State highways in various municipalities: —

*Hingham.*

Feb. 7, 1922, contract made with W. H. Connor & Son Company of Middleborough for the construction of a retaining wall and extension of bridges on 150 feet of State highway on Summer Street. The proposal amounted to \$23,365.

Work completed Sept. 13, 1922.

Expenditure during 1922, \$23,077.50.

*Falmouth.*

March 28, 1922, contract made with Atwood-Thomas Construction Company of Middleborough for the construction of a bridge and approaches on 625 feet of State highway, the surfacing consisting of bituminous macadam 18 feet wide. The proposal amounted to \$8,602.50.

Work completed Sept. 13, 1922.

Expenditure during 1922, \$6,685.99.

*Wilbraham-Palmer-Monson.*

March 28, 1922, contract made with D'Onfro Brothers, Inc., of Leominster for the construction of about 13,665 feet of State highway on the Boston Post Road, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$149,535.50.

Work completed Dec. 19, 1922.

Expenditure during 1922, \$141,499.38.

*Hingham.*

March 29, 1922, contract made with Charles M. Callahan of Boston for the construction of about 3,465 feet of State highway on Otis and Summer streets, the surface consisting of cement



concrete 30 feet wide on 3,050 feet, and bituminous macadam on 415 feet. The proposal amounted to \$42,886.50.

Work completed Sept. 13, 1922.

Expenditure during 1922, \$57,088.77.

*Topsfield-Ipswich-Rowley-Newbury.*

April 4, 1922, contract made with Coleman Brothers, Inc., of Boston for the construction of 10.557 miles of State highway on the Newburyport Turnpike, the surface, varying from 18 to 24 feet in width, consisting of bituminous macadam on 3.232 miles, and cement concrete on 7.325 miles. The proposal amounted to \$503,830.50.

Work completed Dec. 12, 1922.

Expenditure during 1922, \$464,728.71.

*Southwick.*

April 11, 1922, contract made with Cenedella & Co. of Milford for the construction of 6.875 miles of State highway on the Westfield-Granby road and 3.258 miles of town road on the Southwick-Granville road, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$301,531.

Work about two-thirds completed.

Expenditure during 1922, \$222,095.80.

*Shelburne.*

May 2, 1922, contract made with Thomas J. Quinn of Ashton, R. I., for the construction of 4.45 miles of State highway on the Greenfield road, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$219,349.

Work completed Nov. 28, 1922.

Expenditure during 1922, \$199,871.94.

*Williamstown-New Ashford.*

May 9, 1922, contract made with the Hoyt Construction Company of Holyoke for the construction of 5,350 feet of State highway on the River Road in Williamstown and 12,196

feet of State highway in New Ashford, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$127,604.55.

Work about 90 per cent completed.

Expenditure during 1922, \$110,681.93.

*Easton-Raynham.*

June 6, 1922, contract made with Carlo Bianchi & Co., Inc., of Framingham for the construction of 18,700 feet of State highway on the turnpike in Easton and 325 feet of State highway in Raynham, the surface, 20 feet in width, consisting of bituminous macadam on 14,900 feet, and cement concrete on 4,125 feet. The proposal amounted to \$180,342.35.

Work about 80 per cent completed.

Expenditure during 1922, \$142,607.47.

*Mendon.*

June 6, 1922, contract made with the Luigi C. Carchia Company of Boston for the construction of 2.504 miles of State highway on the Hopedale road, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$101,081.

Work about 90 per cent completed.

Expenditure during 1922, \$90,234.29.

*Lee.*

June 6, 1922, contract made with Charles E. Horne of Millbury for the surfacing of 13,700 feet of State highway on Maple, Housatonic and Water streets, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$143,139.

Work about 90 per cent completed.

Expenditure during 1922, \$122,457.66.

*Dalton-Windsor.*

June 6, 1922, contract made with the Lane Construction Corporation of Meriden, Conn., for the construction and reconstruction of 11,048 feet of State highway in Dalton and 7,889 feet of State highway in Windsor, the surface consisting

of bituminous macadam 18 feet wide. The proposal amounted to \$161,958.50.

Work completed Dec. 26, 1922.

Expenditure during 1922, \$139,344.14.

*Cummington-Goshen.*

June 13, 1922, contract made with Thomas J. Quinn of Ashton, R. I., for the construction of 3,756 feet in Cummington and 16,185 feet in Goshen, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$221,951.60.

Work about 80 per cent completed.

Expenditure during 1922, \$172,246.16.

*Haverhill-Merrimac.*

June 20, 1922, contract made with the Rowe Contracting Company of Malden for the surfacing of 4,500 feet of State highway in Merrimac and 14,029 feet of State highway in Haverhill, the surface consisting of cement concrete varying from 20 to 24 feet wide. The proposal amounted to \$189,082.25.

Work about 70 per cent completed.

Expenditure during 1922, \$134,106.33.

*Windsor-Cummington.*

June 20, 1922, contract made with the Hanscom Construction Company of Boston for the construction of five bridges and the approaches thereto on 1.48 miles of State highway, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$119,803.25.

Work about one-half completed.

Expenditure during 1922, \$66,862.75.

*North Adams.*

July 5, 1922, contract made with the city of North Adams for the construction of 681 feet of State highway on the Hodges Crossing road, the surface consisting of cement concrete 20 feet wide. The estimated cost amounted to \$9,500.

Work about one-fourth completed.

Expenditure during 1922, \$2,533.64.



*Dover.*

July 11, 1922, contract made with the town of Dover for the reconstruction of 272 feet of State highway at the approach to Day's bridge over the Charles River, the surface consisting of bituminous macadam, varying from 18 to 26 feet in width. The estimated cost amounted to \$1,250.

Expenditure during 1922, \$6.58.

*Needham.*

July 11, 1922, contract made with the town of Needham for the reconstruction of 190 feet of State highway at the approach to Day's bridge over the Charles River, the surface consisting of bituminous macadam, varying from 18 to 26 feet in width. The estimated cost amounted to \$1,250.

No expenditures made during 1922.

*Becket.*

July 18, 1922, contract made with the Frissell Engineering Company of Gardner for the construction of three bridges and the approaches thereto on 1,000 feet of State highway, the surface consisting of gravel 18 feet wide. The proposal amounted to \$26,201.75.

Work completed Dec. 26, 1922.

Expenditure during 1922, \$21,532.71.

*Great Barrington.*

July 18, 1922, contract made with the Lane Construction Corporation of Meriden, Conn., for the construction of 16,037 feet of State highway on Maple Avenue, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$117,417.85.

Work about one-third completed.

Expenditure during 1922, \$45,783.72.

*Lowell.*

July 18, 1922, contract made with Powers Brothers of Brockton for the construction of 5,158 feet of State highway on First Street, the surface consisting of bituminous macadam 27 feet wide. The proposal amounted to \$103,918.

Work about one-fourth completed.

Expenditure during 1922, \$27,365.64.

*Sterling—West Boylston.*

July 26, 1922, contract made with the State Contracting Company of Boston for the construction of 7,246 feet of State highway on Lancaster Street in Sterling and 11,188 feet in West Boylston, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$104,268.25.

Work about two-fifths completed.

Expenditure during 1922, \$41,126.41.

*Andover.*

July 26, 1922, contract made with the M. McDonough Company of Swampscott for the surfacing of 6,385 feet of State highway on Main Street, the surface consisting of cement concrete varying from 24 to 34 feet in width. The proposal amounted to \$90,224.

Expenditure during 1922, \$4,296.61.

*Leicester.*

Aug. 16, 1922, contract made with Bruno & Petitti of Boston for the surfacing of 14,694 feet of State highway on the Boston road, the surface, 20 feet wide, consisting of bituminous macadam on 486 feet and cement concrete on 14,208 feet. The proposal amounted to \$187,092.25.

Expenditure during 1922, \$18,627.17.

The expenditures during the year in various counties were: —

COUNTY.	Amount.
Barnstable . . . . .	\$24,126 48
Berkshire . . . . .	454,228 41
Bristol . . . . .	162,642 29
Essex . . . . .	914,752 85
Franklin . . . . .	327,055 27
Hampden . . . . .	202,895 98
Hampshire . . . . .	346,939 75
Middlesex . . . . .	83,066 50
Suffolk . . . . .	54,420 18
Worcester . . . . .	313,464 83

Details of the foregoing expenditures follow: —

*Barnstable County.*

Wellfleet . . . . .	\$24,126 48
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*Berkshire County.*

Becket . . . . .	24,533 74
Dalton . . . . .	98,976 72
Egremont . . . . .	45,326 23
Great Barrington . . . . .	52,164 63
New Ashford . . . . .	90,797 57
North Adams . . . . .	2,886 76
Williamstown . . . . .	35,310 19
Windsor . . . . .	104,232 57

*Bristol County.*

Easton . . . . .	162,482 78
Taunton . . . . .	159 51

*Essex County.*

Danvers . . . . .	133,285 26
Ipswich . . . . .	90,014 71
Lynnfield . . . . .	14,046 54
Middleton . . . . .	16,105 69
Newbury . . . . .	217,094 30
Peabody . . . . .	8,289 44
Rowley . . . . .	174,734 45
Saugus . . . . .	1,899 66
Topsfield . . . . .	259,282 80



*Franklin County.*

Greenfield . . . . .	\$33,771 19
Shelburne . . . . .	293,284 08

*Hampden County.*

Southwick . . . . .	202,895 98
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*Hampshire County.*

Cummington . . . . .	132,495 16
Goshen . . . . .	155,039 26
Huntington . . . . .	39,768 50
Ware . . . . .	19,636 83

*Middlesex County.*

Littleton . . . . .	43,955 89
Lowell . . . . .	31,179 61
Woburn . . . . .	7,931 00

*Suffolk County.*

Boston . . . . .	54,420 18
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*Worcester County.*

Athol . . . . .	838 19
Barre . . . . .	2,939 70
Leicester . . . . .	1,222 57
Mendon . . . . .	117,326 23
Oakham . . . . .	338 86
Oxford . . . . .	28,416 26
Petersham . . . . .	197 99
Sterling . . . . .	29,052 10
Templeton . . . . .	10,328 78
Upton . . . . .	113 65
Uxbridge . . . . .	448 95
West Boylston . . . . .	17,806 13
Winchendon . . . . .	104,435 42
Total . . . . .	\$2,883,592 54

## MAINTENANCE OF STATE HIGHWAYS.

(Section 13, chapter 81, General Laws.)

Section 13 of chapter 81 of the General Laws provides —

State highways shall be maintained and kept in good repair and condition by the division at the expense of the commonwealth. The division shall keep all state highways reasonably clear of brush, shall cause suit-

able shade trees to be planted thereon if practicable, and may establish and maintain watering troughs upon said highways.

The expenditures during the year in various counties were: —

COUNTY.	Amount.
Barnstable . . . . .	\$76,271 12
Berkshire . . . . .	333,528 19
Bristol . . . . .	80,622 95
Dukes . . . . .	9,231 72
Essex . . . . .	300,136 81
Franklin . . . . .	109,796 37
Hampden . . . . .	265,332 23
Hampshire . . . . .	69,635 85
Middlesex . . . . .	191,085 40
Nantucket . . . . .	2,038 60
Norfolk . . . . .	99,800 75
Plymouth . . . . .	99,716 70
Suffolk . . . . .	10,733 65
Worcester . . . . .	304,676 22

Details of the foregoing expenditures follow: —

*Barnstable County.*

Barnstable . . . . .	\$4,871 86
Bourne . . . . .	10,617 97
Brewster . . . . .	2,501 88
Chatham . . . . .	4,378 38
Dennis . . . . .	5,840 23
Eastham . . . . .	751 64
Falmouth . . . . .	9,012 30
Harwich . . . . .	6,672 23
Mashpee . . . . .	1,726 30
Orleans . . . . .	2,988 83
Provincetown . . . . .	6,135 58
Sandwich . . . . .	5,096 69
Truro . . . . .	5,949 61
Wellfleet . . . . .	2,466 76
Yarmouth . . . . .	7,260 86

*Berkshire County.*

Adams . . . . .	2,713 83
Becket . . . . .	12,614 43
Cheshire . . . . .	10,441 91

Clarksburg . . . . .	\$5,267 79
Dalton . . . . .	4,051 68
Egremont . . . . .	5,801 09
Florida . . . . .	17,485 80
Great Barrington . . . . .	7,010 72
Hancock . . . . .	1,445 85
Hinsdale . . . . .	4,084 56
Lanesborough . . . . .	2,534 03
Lee . . . . .	159,130 00
Lenox . . . . .	14,385 46
New Ashford . . . . .	63 95
New Marlborough . . . . .	166 99
North Adams . . . . .	37,081 04
Pittsfield . . . . .	13,342 45
Richmond . . . . .	5,426 64
Savoy . . . . .	4,339 50
Sheffield . . . . .	7,530 13
Stockbridge . . . . .	3,514 35
Washington . . . . .	763 07
Williamstown . . . . .	10,494 99
Windsor . . . . .	3,837 93

*Bristol County.*

Acushnet . . . . .	3,875 98
Attleboro . . . . .	2,552 34
Berkley . . . . .	1,369 96
Dartmouth . . . . .	4,917 78
Dighton . . . . .	3,052 29
Easton . . . . .	88 98
Fairhaven . . . . .	1,467 42
Fall River . . . . .	111 42
Freetown . . . . .	1,184 33
Mansfield . . . . .	1,073 98
North Attleborough . . . . .	3,899 51
Norton . . . . .	5,066 12
Raynham . . . . .	3,211 35
Rehoboth . . . . .	3,122 17
Seekonk . . . . .	7,372 69
Somerset . . . . .	17,811 21
Swansea . . . . .	8,683 11
Taunton . . . . .	5,791 05
Westport . . . . .	5,971 26

*Dukes County.*

Chilmark . . . . .	2,617 79
Edgartown . . . . .	257 79
Gay Head . . . . .	3,052 74



Oak Bluffs . . . . .	\$253 06
Tisbury . . . . .	306 97
West Tisbury . . . . .	2,743 37

*Essex County.*

Amesbury . . . . .	3,619 20
Andover . . . . .	11,179 08
Beverly . . . . .	6,588 16
Danvers . . . . .	1,341 35
Essex . . . . .	1,447 60
Gloucester . . . . .	5,456 80
Groveland . . . . .	3,139 91
Hamilton . . . . .	1,478 47
Haverhill . . . . .	113,336 48
Ipswich . . . . .	8,884 74
Lawrence . . . . .	1,663 10
Lynn . . . . .	2,446 25
Lynnfield . . . . .	1,324 63
Merrimac . . . . .	61,817 37
Methuen . . . . .	10,833 93
Middleton . . . . .	2,417 00
Newbury . . . . .	8,500 39
Newburyport . . . . .	2,598 70
North Andover . . . . .	15,162 05
Peabody . . . . .	1,484 92
Rockport . . . . .	1,484 17
Rowley . . . . .	6,044 39
Salem . . . . .	1,977 45
Salisbury . . . . .	11,220 09
Saugus . . . . .	5,119 70
Swampscott . . . . .	944 09
Wenham . . . . .	3,444 56
West Newbury . . . . .	5,182 23

*Franklin County.*

Ashfield . . . . .	1,540 54
Bernardston . . . . .	31,273 36
Buckland . . . . .	2,810 70
Charlemont . . . . .	16,250 91
Colrain . . . . .	2,152 56
Conway . . . . .	2,000 12
Deerfield . . . . .	12,317 90
Erving . . . . .	10,223 62
Gill . . . . .	53 80
Greenfield . . . . .	4,108 03
Montague . . . . .	4,845 71
Northfield . . . . .	3,436 47

Orange . . . . .	\$10,184 18
Shelburne . . . . .	4,066 85
Sunderland . . . . .	1,790 42
Whately . . . . .	2,741 20

*Hampden County.*

Agawam . . . . .	3,448 06
Blandford . . . . .	3,759 12
Brimfield . . . . .	3,096 52
Chester . . . . .	6,655 05
Chicopee . . . . .	7,521 62
East Longmeadow . . . . .	2,613 41
Holyoke . . . . .	2,759 01
Monson . . . . .	50,875 34
Palmer . . . . .	141,627 62
Russell . . . . .	23,371 34
Wales . . . . .	1,674 74
West Springfield . . . . .	1,375 13
Westfield . . . . .	9,426 32
Wilbraham . . . . .	7,128 95

*Hampshire County.*

Amherst . . . . .	6,717 83
Belchertown . . . . .	2,300 90
Cummington . . . . .	4,255 86
Easthampton . . . . .	1,078 41
Goshen . . . . .	1,467 98
Granby . . . . .	5,885 30
Hadley . . . . .	9,318 69
Hatfield . . . . .	1,087 01
Huntington . . . . .	8,783 39
Northampton . . . . .	2,222 81
South Hadley . . . . .	6,999 86
Southampton . . . . .	467 65
Ware . . . . .	13,946 88
Williamsburg . . . . .	5,103 28

*Middlesex County.*

Acton . . . . .	4,469 52
Arlington . . . . .	311 95
Ashby . . . . .	3,672 51
Ashland . . . . .	2,667 68
Ayer . . . . .	1,890 43
Bedford . . . . .	1,894 85
Billerica . . . . .	2,072 39
Boxborough . . . . .	3,416 47
Burlington . . . . .	2,374 25

Chelmsford . . . . .	\$11,419 00
Concord . . . . .	3,395 41
Dracut . . . . .	3,290 34
Framingham . . . . .	6,755 28
Groton . . . . .	2,598 90
Holliston . . . . .	4,462 39
Hudson . . . . .	1,753 01
Lexington . . . . .	4,875 62
Lincoln . . . . .	1,466 44
Littleton . . . . .	25,605 29
Lowell . . . . .	6,708 35
Malden . . . . .	181 32
Marlborough . . . . .	7,891 64
Medford . . . . .	459 74
Melrose . . . . .	1,547 03
Natick . . . . .	1,076 40
Newton . . . . .	329 94
North Reading . . . . .	1,411 24
Pepperell . . . . .	2,676 22
Reading . . . . .	2,528 50
Shirley . . . . .	1,837 39
Somerville . . . . .	2,605 67
Stoneham . . . . .	1,656 20
Sudbury . . . . .	3,081 54
Tewksbury . . . . .	4,186 44
Townsend . . . . .	4,409 60
Tyngsborough . . . . .	10,472 88
Waltham . . . . .	1,152 55
Watertown . . . . .	991 88
Wayland . . . . .	3,649 63
Westford . . . . .	4,751 55
Weston . . . . .	5,710 33
Wilmington . . . . .	1,474 69
Winchester . . . . .	27,565 82
Woburn . . . . .	4,337 12

*Nantucket County.*

Nantucket . . . . .	2,038 60
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*Norfolk County.*

Avon . . . . .	1,281 62
Bellingham . . . . .	3,415 84
Braintree . . . . .	3,013 49
Canton . . . . .	5,450 51
Cohasset . . . . .	591 53
Dedham . . . . .	4,249 49
Dover . . . . .	2,005 07



Foxborough . . . . .	\$1,761 19
Franklin . . . . .	4,195 14
Holbrook . . . . .	2,229 98
Milton . . . . .	2,033 65
Needham . . . . .	2,869 80
Norfolk . . . . .	2,152 71
Norwood . . . . .	4,027 85
Plainville . . . . .	5,557 80
Quincy . . . . .	1,697 28
Randolph . . . . .	4,180 21
Sharon . . . . .	321 90
Stoughton . . . . .	23,467 82
Walpole . . . . .	8,180 75
Wellesley . . . . .	778 87
Westwood . . . . .	1,094 89
Weymouth . . . . .	4,652 95
Wrentham . . . . .	10,590 41

*Plymouth County.*

Abington . . . . .	2,343 33
Bridgewater . . . . .	5,783 22
Brockton . . . . .	2,916 48
Duxbury . . . . .	3,392 73
East Bridgewater . . . . .	2,781 25
Hanover . . . . .	5,475 79
Hingham . . . . .	3,560 14
Kingston . . . . .	4,714 04
Lakeville . . . . .	9,237 90
Marion . . . . .	2,732 00
Marshfield . . . . .	3,723 92
Mattapoisett . . . . .	1,805 78
Middleborough . . . . .	10,525 57
Norwell . . . . .	451 73
Pembroke . . . . .	2,774 22
Plymouth . . . . .	8,908 49
Rochester . . . . .	4,380 00
Rockland . . . . .	5,366 37
Scituate . . . . .	4,417 00
Wareham . . . . .	8,987 55
West Bridgewater . . . . .	3,837 88
Whitman . . . . .	1,601 31

*Suffolk County.*

Boston . . . . .	2,594 09
Chelsea . . . . .	1,926 94
Revere . . . . .	6,212 62

*Worcester County.*

Ashburnham . . . . .	\$7,766 20
Athol . . . . .	3,804 02
Auburn . . . . .	8,017 30
Barre . . . . .	4,526 01
Blackstone . . . . .	3,490 19
Brookfield . . . . .	21,105 71
Charlton . . . . .	8,254 80
Douglas . . . . .	2,045 01
Dudley . . . . .	4,555 42
East Brookfield . . . . .	2,468 55
Fitchburg . . . . .	3,759 77
Gardner . . . . .	1,834 02
Grafton . . . . .	10,923 31
Hardwick . . . . .	580 20
Harvard . . . . .	2,572 55
Holden . . . . .	6,704 11
Hopedale . . . . .	1,388 69
Lancaster . . . . .	2,310 09
Leicester . . . . .	66,768 48
Leominster . . . . .	4,494 94
Lunenburg . . . . .	6,122 04
Mendon . . . . .	1,151 97
Milford . . . . .	4,216 21
Millbury . . . . .	3,622 22
Millville . . . . .	4,443 82
New Braintree . . . . .	125 70
North Brookfield . . . . .	1,826 36
Northborough . . . . .	5,713 87
Northbridge . . . . .	1,727 12
Oakham . . . . .	1,293 84
Oxford . . . . .	4,479 30
Paxton . . . . .	3,292 51
Petersham . . . . .	4,699 16
Phillipston . . . . .	1,151 03
Princeton . . . . .	727 61
Rutland . . . . .	3,063 05
Shrewsbury . . . . .	5,249 11
Southborough . . . . .	2,703 53
Southbridge . . . . .	546 67
Spencer . . . . .	3,003 01
Sterling . . . . .	9,143 10
Sturbridge . . . . .	1,408 81
Sutton . . . . .	8,216 33
Templeton . . . . .	3,455 86
Upton . . . . .	7,078 05
Uxbridge . . . . .	6,532 85

Warren . . . . .	\$3,365 67
Webster . . . . .	1,761 87
West Boylston . . . . .	2,619 78
West Brookfield . . . . .	7,787 98
Westborough . . . . .	2,023 52
Westminster . . . . .	8,984 05
Winchendon . . . . .	8,595 13
Worcester . . . . .	7,175 72
Total . . . . .	<sup>1</sup> \$1,952,606 56

#### HIGHWAY IMPROVEMENTS AUTHORIZED BY SPECIAL ACTS.

The following contracts were entered into during the year for the construction of town ways under special acts of the Legislature: —

##### *Ashfield.*

Aug. 29, 1922, contract made with Thomas J. Quinn of Ashton, R. I., for the construction of 8,646 feet of the Plainfield road, under chapter 221 of the General Acts of 1915, as amended, the surface consisting of gravel 18 feet wide. This is to complete the 1921 contract taken from Alexander Palladino.

Expenditure during 1922, \$392.54.

##### *Holyoke.*

Aug. 29, 1922, contract made with Daniel O'Connell's Sons of Holyoke for the construction of 6,060 feet of the Easthampton road, under chapter 538 of the Acts of 1922, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$40,749.25.

Work about one-fourth completed.

Expenditure during 1922, \$11,287.63.

##### *Middlefield.*

Oct. 3, 1922, contract made with Wm. H. Hinman, Jr., of Medway for the construction of 3,250 feet of the Peru road, under chapter 221 of the General Acts of 1915, as amended, the surface consisting of hardpan 18 feet wide. The proposal amounted to \$23,953.70.

Work about one-fifth completed.

Expenditure during 1922, \$5,787.64.

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<sup>1</sup> To this amount should be added \$2,613.52 for traffic census and \$7,877.78 for roadside planting.



*Chelsea.*

Oct. 3, 1922, contract made with the city of Chelsea for the construction of 1,800 feet of Summit and Crest avenues, under chapter 28 of the Resolves of 1922, the surface consisting of bituminous macadam 24 feet wide. The estimated cost amounted to \$15,000.

Expenditure during 1922, \$13.39.

*Enfield.*

Oct. 10, 1922, contract made with Lawrence J. Kelleher of Montague for the construction of 5,700 feet of the Ware road, under chapter 221 of the General Acts of 1915, as amended, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$35,205.

Expenditure during 1922, \$2,416.36.

*Otis-Sandisfield.*

Nov. 21, 1922, contract made with the Lane Construction Corporation of Meriden, Conn., for the construction of 19,706 feet of road in Otis and 20,213 feet of road in Sandisfield, under chapter 221 of the General Acts of 1915, as amended, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$307,415.20.

Expenditure during 1922, \$182.35.

*Grafton.*

Nov. 28, 1922, contract with the town of Grafton, sublet to the Middlesex Construction Company of Medford for the construction of 2,400 feet of the Westborough road, under chapter 539 of the Acts of 1922, the surface consisting of bituminous macadam varying from 18 to 21 feet wide. The proposal amounted to \$13,845.80.

No expenditures made during 1922.

## FEDERAL AID IN CONSTRUCTING HIGHWAYS.

Statements as to the acts of Congress and of the Massachusetts Legislature with respect to co-operation between the United States and the States in the construction and main-

tenance of highways, including the Federal Highway Act approved Nov. 9, 1921, may be found in the annual reports of this Department for the years 1920 and 1921.

Reference is made to the provisions of an act of Congress, approved June 19, 1922, amending the Federal Highway Act aforesaid, printed on pages 74, 75 of this report.

The following Federal-aid allotments have thus far been made to Massachusetts: —

For fiscal year ending June 30, 1917	. . . . .	\$73,850 95
For fiscal year ending June 30, 1918	. . . . .	147,701 90
For fiscal year ending June 30, 1919	. . . . .	958,145 15
For fiscal year ending June 30, 1920	. . . . .	1,400,078 27
For fiscal year ending June 30, 1921	. . . . .	1,472,788 83
For fiscal year ending June 30, 1922	. . . . .	1,096,176 04
For fiscal year ending June 30, 1923	. . . . .	730,784 03
Total	. . . . .	\$5,879,525 17

The total amount received by Massachusetts from 1916 to Nov. 30, 1922, is \$2,754,453.77.

Projects to the number of 25 have been prepared in addition to those shown in the report of the Department of Public Works, Division of Highways, for 1921. The total mileage included in the various Federal-aid road projects in this State, from the commencement of work of this character to Nov. 30, 1922, inclusive, is 319.870. The mileage in the various counties is: —

COUNTY.	Miles.
Barnstable . . . . .	30.605
Berkshire . . . . .	47.753
Bristol . . . . .	14.454
Dukes . . . . .	3.134
Essex . . . . .	47.885
Franklin . . . . .	23.286
Hampden . . . . .	16.231
Hampshire . . . . .	20.077
Middlesex . . . . .	29.279
Norfolk . . . . .	23.160
Plymouth . . . . .	14.738
Worcester . . . . .	49.268
Total . . . . .	319.870

STATEMENT OF FEDERAL-AID ROAD PROJECTS<sup>1</sup> TO NOV. 30, 1922.

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
1	Acushnet-Fairhaven . . .	2.182	\$21,820 00	\$21,820 00	Work completed.
2	Hanover . . . . .	2.708	19,480 36	19,480 36	Work completed.
3	Malden-Melrose-Saugus . .	1.162	11,620 00	11,620 00	Work completed.
4	Danvers . . . . .	1.325	15,460 22	15,460 22	Work completed.
5	Windsor-Dalton . . . . .	3.240	64,800 00	64,800 00	Work completed.
6	Sandwich . . . . .	1.818	10,678 02	10,678 02	Work completed.
7	Cummington . . . . .	4.659	86,816 53	86,816 53	Work completed.
8	Athol-Petersham . . . . .	7.016	90,074 51	90,074 51	Work completed.
9	Saugus . . . . .	3.122	65,472 27	65,472 27	Work completed.
10	Braintree . . . . .	2.420	40,554 80	40,554 80	Work completed.
11	Concord-Acton-Littleton . .	4.849	77,600 87	77,600 87	Work completed.
12	Ipswich . . . . .	2.173	21,851 50	21,851 50	Work completed.
13	Littleton-Groton . . . . .	6.450	130,504 25	130,504 25	Work completed.
14	Barnstable . . . . .	3.331	22,687 65	22,687 65	Work completed.
15	Norwell-Hingham . . . . .	4.380	59,501 75	59,501 75	Work completed.
17	Lynnfield-Peabody . . . . .	1.794	35,880 00	35,880 00	Work completed.
18	Lunenburg . . . . .	2.797	55,940 00	33,903 53	Work completed.
19	Taunton . . . . .	2.116	42,320 00	42,320 00	Work completed.
20	Tewksbury . . . . .	2.909	35,211 82	35,211 82	Work completed.
21	Pittsfield-Hancock . . . . .	3.637	72,740 00	51,179 13	Work completed.
22	Greenfield-Bernardston . . .	6.426	88,270 71	88,270 71	Work completed.
23	Great Barrington . . . . .	2.123	31,348 89	31,348 89	Work completed.
24	Seekonk . . . . .	2.756	19,527 75	19,527 75	Work completed.
25	Billerica . . . . .	.578	38,389 77	38,389 77	Work completed.
26	Greenfield-Shelburne:				
	Section 1 . . . . .	5.134	102,680 00	102,680 00	Work completed.
	Section 2 . . . . .	4.401	88,020 00	72,708 60	Work completed.
27	Hamilton-Wenham . . . . .	1.766	20,207 27	20,207 27	Work completed.
28	Lanesborough:				
	Section A . . . . .	.990	19,780 00	19,780 00	Work completed.
	Section B . . . . .	2.680	53,800 00 <sup>2</sup>	-	Project approved.
29	Ware . . . . .	2.626	46,557 55	46,557 55	Work completed.
30	Brimfield . . . . .	4.206	84,120 00 <sup>2</sup>	-	Project approved.
31	Danvers-Peabody . . . . .	1.107	22,140 00	22,140 00	Work completed.
32	Huntington . . . . .	3.078	102,103 37	50,848 00	Work completed.

<sup>1</sup> All of these projects are now, or will be later, State highways. <sup>2</sup> Signed agreements.



STATEMENT OF FEDERAL-AID ROAD PROJECTS—*Continued.*

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
33	Acton-Littleton:				
	Section A . . . . .	2.182	\$43,640 00	\$43,640 00	Work completed.
	Section B . . . . .	1.624	25,847 25	25,847 25	Work completed.
34	Dudley . . . . .	1.359	27,180 00	27,180 00	Work completed.
35	Haverhill-Methuen . . . .	4.544	90,880 00	—	Project approved.
36	Eastham-Wellfleet-Truro- Provincetown:				
	Section A . . . . .	10.690	91,347 85	91,347 85	Work completed.
	Section B . . . . .	6.719	75,935 60 <sup>1</sup>	—	Project approved.
	Section C . . . . .	8.047	86,130 51	34,052 30	3.6 miles completed.
37	Egremont . . . . .	1.164	20,579 07	20,579 07	Work completed.
38	Peabody-Danvers . . . . .	2.827	56,540 00	56,540 00	Work completed.
39	Williamstown-New Ashford- Lanesborough:				
	Section A . . . . .	.020	14,132 25	—	Work completed.
	Section B . . . . .	3.323	66,460 00	—	Project approved.
	Section C . . . . .	4.560	91,200 00	—	Project approved.
40	East Brookfield . . . . .	1.011	20,220 00	20,220 00	Work completed.
41	Ashby . . . . .	1.250	22,141 03	22,141 03	Work completed.
42	Washington . . . . .	2.291	45,820 00	45,820 00	Work completed.
43	Leicester . . . . .	.638	12,760 00	12,760 00	Work completed.
44	Goshen-Cummington-Wind- sor:				
	Section A . . . . .	1.494	29,880 00	—	Work under way.
	Section B . . . . .	1.479	50,538 14	—	Work under way.
	Section C . . . . .	3.780	82,915 42	—	Work under way.
45	Palmer:				
	Sections A and C . . . . .	1.795	35,900 60	35,900 00	Work completed.
	Section B . . . . .	.530	10,600 00	—	Project approved.
46	Upton-Hopedale:				
	Section A . . . . .	1.672	33,440 00	33,440 00	Work completed.
	Section B . . . . .	2.589	51,780 00	—	Project approved.
47	Barre-Oakham . . . . .	1.737	38,037 25	32,358 66	Work completed.
49	Middleborough . . . . .	2.108	25,461 70	—	Project approved.
50	Lunenburg . . . . .	1.763	35,260 00 <sup>1</sup>	—	Project approved.
51	Mendon-Uxbridge:				
	Section A . . . . .	1.959	39,180 00	39,180 00	Work completed.
	Section B . . . . .	2.504	50,080 00 <sup>1</sup>	—	Project approved.
52	Oxford . . . . .	3.208	64,160 00	64,160 00	Work completed.

<sup>1</sup> Signed agreements.

STATEMENT OF FEDERAL-AID ROAD PROJECTS — *Continued.*

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
53	East Brookfield-Spencer-West Brookfield-Brookfield:				
	Section A . . . . .	.890	\$17,800 00	\$17,800 00	Work completed.
	Section B . . . . .	1.682	33,640 00	33,640 00	Work completed.
54	Leicester:				
	Section A . . . . .	.829	16,580 00	16,580 00	Work completed.
	Section B . . . . .	2.691	53,820 00 <sup>1</sup>	—	Project approved.
55	Quincy . . . . .	.549	10,980 00	10,980 00	Work completed.
56	Stoughton . . . . .	2.141	42,820 00	42,820 00	Work completed.
57	Winchester-Woburn . . . . .	3.042	59,131 31	59,131 31	Work completed.
58	Littleton . . . . .	1.345	26,900 00	26,900 00	Work completed.
59	Egremont . . . . .	.784	15,680 00 <sup>1</sup>	—	Work completed.
60	Middleton-Danvers . . . . .	1.907	38,224 70	38,224 70	Work completed.
61	Winchendon-Templeton . . . . .	5.393	107,860 00	90,081 12	Work completed.
62	Danvers-Topsfield:				
	Section A . . . . .	3.009	60,180 00	43,036 98	Work completed.
	Section B . . . . .	3.513	83,347 62	38,900 18	Work completed.
63	Essex-Ipswich . . . . .	4.489	89,780 00	—	Project approved.
64	Norwood . . . . .	1.065	21,300 00 <sup>1</sup>	—	Project approved.
65	North Adams . . . . .	1.638	32,760 00	32,760 00	Work completed.
66	Uxbridge . . . . .	1.168	23,360 00	—	Project approved, 67 and 68 withdrawn.
69	Haverhill . . . . .	2.657	53,140 00	—	Work under way.
70	Palmer . . . . .	2.550	51,000 00	22,917 83	Work under way.
71	Wrentham . . . . .	1.846	36,940 00 <sup>1</sup>	—	Project approved.
72	Walpole . . . . .	3.081	61,620 00	—	Project approved.
73	Southwick . . . . .	6.879	135,027 64	83,395 50	Work under way.
74	Becket . . . . .	.156	16,233 38	—	Work under way.
75	Topsfield-Ipswich-Rowley- Newbury:				
	Section A . . . . .	10.207	207,919 00	142,244 24	Work under way.
	Section B . . . . .	.350	7,000 00	—	Project approved.
76	Norfolk . . . . .	1.447	28,940 00	—	Project approved.
77	Merrimac . . . . .	1.020	20,400 00	—	Work under way.
78	Burlington . . . . .	3.761	75,220 00 <sup>1</sup>	—	Project approved.
79	Great Barrington . . . . .	2.991	59,820 00	—	Work under way.
80	Lee:				
	Section A . . . . .	.909	18,180 00	—	Work under way.
	Section B . . . . .	.284	5,680 00	—	Project approved.

<sup>1</sup> Signed agreements.

STATEMENT OF FEDERAL-AID ROAD PROJECTS — *Concluded.*

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
81	Deerfield . . . .	.710	\$14,200 00	-	Project sent.
82	Whately . . . .	1.756	35,120 00	-	Project sent.
83	Pembroke . . . .	1.402	28,040 00	-	Project approved.
84	Sterling-West Boylston . .	3.491	59,637 13	-	Work under way.
85	Dalton (Hinsdale Road):				
	Section A . . . .	.967	19,340 00	-	Work under way.
	Section B . . . .	.065	4,400 00	-	Project approved.
86	Gay Head . . . .	3.134	43,312 50	-	Project approved.
87	Dalton (Windsor Road):				
	Section A . . . .	1.056	21,120 00	-	Work under way.
	Section B . . . .	.024	6,980 00	-	Project approved.
88	Erving . . . .	4.859	97,180 00	-	Project approved.
89	Easton:				
	Sections A and B . .	3.540	70,800 00	-	Work under way.
	Section C . . . .	3.860	77,200 00	-	Project approved.
90	Brookfield-East Brookfield .	1.231	24,870 00	-	Project approved.
91	Lowell . . . .	.977	19,540 00	-	Work under way.
92	Bellingham . . . .	5.250	105,000 00	-	Project approved.
93	Wilbraham . . . .	.123	61,758 81	-	Project sent.
94	Otis-Sandisfield . . . .	7.565	122,931 25 <sup>1</sup>	-	Project approved.
95	Westfield . . . .	.148	12,677 08	-	Project approved.
96	Rochester-Wareham . .	4.140	70,275 00	-	Project approved.
97	- - -	-	-	-	Withdrawn.
98	Sheffield . . . .	3.052	54,095 00	-	Project approved.
99	Gloucester . . . .	1.225	19,906 25	-	Project approved.
100	Rutland . . . .	3.640	59,150 00	-	Project approved.
101	Hinsdale . . . .	1.194	26,902 50	-	Project sent.
102	Plainville-Wrentham . .	5.361	87,116 25	-	Project sent.
103	Adams . . . .	.568	9,230 00	-	Project sent.
	Southampton . . . .	5.433	88,286 25	-	Project sent.
	Totals . . . .	319.870	\$5,786,357 60	\$2,754,453 77	

<sup>1</sup> Signed agreements.



## BRIDGES.

During the year the Division has prepared designs and plans for, and done other work relating to, bridges throughout the Commonwealth. The various towns, the localities therein, the character of the structure and other details are as follows: —

## BRIDGES BUILT OR CONTRACTED FOR.

TOWN.	Locality.	Character of Structure.
Becket . . .	Over West Branch of Westfield River.	40-foot concrete beam.
Becket . . .	Over West Branch of Westfield River.	26-foot concrete beam.
Becket . . .	Over West Branch of Westfield River.	25-foot concrete beam.
Cummington . . .	Over East Branch of Westfield River.	80-foot concrete arch.
Cummington . . .	Over East Branch of Westfield River.	37-foot span concrete beam.
Cummington . . .	Over Westfield River . . .	38-foot concrete beam.
Cummington . . .	Over Town Brook . . .	14-foot concrete beam.
Easton . . .	Over Black Brook . . .	12-foot concrete slab.
Falmouth . . .	Over Coonemosset River . . .	12½-foot concrete slab.
Goshen . . .	Over Stone's Brook . . .	30-foot concrete beam.
Goshen . . .	Over Stone's Brook . . .	35-foot concrete beam.
Hingham . . .	At Otis and Summer streets	Sea wall and extension of bridges.
Holden . . .	Over Quinnapoxett River . . .	35-foot concrete beam.
Middleton . . .	Over Ipswich River . . .	24½-foot concrete beam.
Newbury . . .	Over Little River . . .	21-foot concrete beam.
Otis . . .	Over brook . . .	15½-foot concrete beam.
Otis . . .	Over brook . . .	13-foot concrete beam.
Otis . . .	Over brook . . .	12-foot concrete slab.
Southwick . . .	Over brook . . .	13-foot concrete beam.
Southwick . . .	Over Great Brook . . .	10-foot concrete slab.
Southwick . . .	Over Uncle Oliver's Brook . . .	10-foot concrete slab.
Southwick . . .	Over Uncle Oliver's Brook . . .	23½-foot concrete beam.
Sutton . . .	Over Cold Spring Brook . . .	14-foot concrete beam.
Topsfield . . .	Over Howlett Brook . . .	8-foot cement rubble masonry.
Topsfield . . .	Newburyport Turnpike, over Howlett Street.	20-foot concrete beam.
Topsfield . . .	Over Mile Brook . . .	10-foot concrete slab.
Windsor . . .	Over Westfield River . . .	20½-foot concrete beam.

ALTERATIONS, REPAIRS AND EXTENSIONS TO BRIDGES COMPLETED IN  
1922.

TOWN.	Locality.	Character of Work.
Fall River . . .	Brightman Street bridge .	Dolphins and fender pier repairs.
Fall River . . .	Brightman Street bridge .	Maintenance repairs.
Haverhill . . .	Over Millvale Brook . .	Extension of a 15-foot concrete beam.
Newburyport . .	Over Merrimack River . .	Maintenance repairs.
Rowley (Newbury line)	Over Mill River . . .	Extension of 18-foot concrete stone arch.
Shelburne (Buckland line).	Over Deerfield River . .	Repairs to 125-foot iron truss.
Shelburne . . .	Over Dragon Brook . . .	Extension of 12½-foot concrete slab.
Southwick . . .	Over Webb Brook . . .	Extension of 7½-foot concrete slab.
Southwick . . .	Over brook . . . . .	Extension of 8-foot concrete slab.
Topsfield . . .	Over Ipswich River . . .	Alterations (concrete) to 32-foot stone arch.

## CONTEMPLATED BRIDGES AND STRUCTURES.

*Plans, Studies or Estimates made.*

TOWN.	Locality.	Character of Structure.
Becket . . . .	Over Sparks Brook . . .	Extension of 13-foot concrete beam.
Bernardston . .	Over Falls River . . .	60-foot concrete arch.
Brimfield . . .	Over Mill Brook . . . .	17½-foot concrete beam.
Bourne . . . .	Over New York, New Haven & Hartford Railroad.	33-foot concrete beam; alternate, 34½-foot concrete beam.
Conway . . . .	Over South River . . . .	82-foot bridge.
Dalton . . . .	Over Housatonic River . .	70-foot concrete arch.
Dalton . . . .	Over branch of Housatonic River.	45-foot concrete beam.
Dalton . . . .	Over Housatonic River . .	40-foot concrete beam.
Dalton . . . .	Over branch of Housatonic River.	2-span concrete beam, each span 25 feet.
Dana . . . . .	Over Ware River . . . .	19-foot concrete beam; alternate of wood.
East Brookfield .	Over Dunn Brook . . . .	Extension of superstructure.
Essex . . . . .	Over causeway . . . . .	Riprap or wall.
Gill . . . . .	Over brook . . . . .	10-foot 8-inch concrete slab.
Grafton . . . .	Over brook . . . . .	12-foot concrete slab.
Harwich . . . .	Over Herring River . . .	118-foot steel truss.
Hinsdale . . . .	Over B. and A. Railroad .	Plate girder, 46-foot span.
Hinsdale . . . .	Over Housatonic River . .	32-foot concrete beam.
Hudson . . . . .	Over Assabet River . . .	2-span concrete beam, each span 32 feet 9 inches.
Huntington . . .	Culver bridge . . . . .	Advice as to repairs.

CONTEMPLATED BRIDGES AND STRUCTURES — *Continued.**Plans, Studies or Estimates made — Concluded.*

TOWN.	Locality.	Character of Structure.
Newbury (Old Town)	Parker River . . .	3-span concrete arch, 2 spans 90 feet each, 1 span 110 feet.
Northbridge . . .	Over Blackstone River . .	2-span concrete beam, each span 39 feet; alternate, 78-foot concrete arch or 2-span concrete slab, each span 47 feet. Drainage data.
Otis . . . . .	West Branch of Farmington River.	
Wareham . . . .	Over Weweantic River . .	25-foot concrete beam.
Westfield . . . .	Over Westfield River . .	36-foot concrete beam.

*Examinations, Reports, Estimates, etc., at Request of Cities and Towns.*

CITIES AND TOWNS.	Locality.	Character of Work.
Attleboro . . . .	Over Bungay River . . .	Examination of plans and advice as to construction.
Bellingham . . .	Over Charles River . . .	On condition of bridge and advice on repairs.
Falmouth . . . .	Over Childs River . . .	Repairs to wooden bridge.
Falmouth . . . .	Over Neck River . . . .	Plans and specifications prepared for 20-foot concrete beam.
Grafton . . . . .	Over Blackstone River . .	Plans and specifications prepared for 2-span concrete beam, each span 39½ feet.
Granby . . . . .	Over Batchelor Brook . .	On condition of bridge and necessary reconstruction.
Hopkinton . . . .	Over railroad . . . . .	On condition and reconstruction.
Maynard . . . . .	Over Assabet River . . .	2-span concrete beam, each span 26 feet 9 inches. Construction supervised.
Maynard . . . . .	Over Assabet River . . .	73-foot concrete arch. Construction supervised.
Medway . . . . .	Over Charles River . . .	Condition and necessary repairs to 61-foot steel bridge.
Middleborough . .	Over Taunton River (Bridge-water line), Titicut bridge.	3-span concrete beam, spans 35 feet each.
New Salem . . .	Over Moose Horn Brook . .	Condition and reconstruction.
Northborough-Westborough.	Over Assabet River . . .	Strength and traffic conditions.
North Reading . .	Washington Street . . .	Condition and necessary repairs.
Petersham . . . .	Over Swift River . . . .	Condition and necessary repairs to wooden truss bridge.
Plymouth . . . . .	Over Eel River . . . . .	26-foot 10-inch concrete beam with split stone and rubble abutments. Construction supervised.
Royalston . . . .	Over Millers River . . . .	2-span concrete beam, 1 span 35.75 feet and 1 span 33.5 feet. Construction supervised.
Shelburne . . . .	Over Deerfield River (Buckland line).	Repairs, painting and wood block floor. Work supervised.
Sherborn . . . . .	Over Beaver Dam Brook . .	Condition and reconstruction.
Stockbridge . . .	Over Housatonic River . .	Condition of four iron bridges.
Townsend . . . .	Bayberry Hill Brook . .	Reconstruction or repairs to wooden bridge.
West Brookfield . .	Over Quaboag River . . .	Reconstruction of wooden bridge.
Wilbraham . . . .	Over canal . . . . .	Condition and necessary repairs.
Woburn . . . . .	Over Aberjona River . . .	Construction of concrete beam, 15-foot span. Construction supervised.



CONTEMPLATED BRIDGES AND STRUCTURES — *Concluded.**Examinations, Reports, Estimates, etc., in Accordance with Legislation.*

CITIES AND TOWNS.	Locality.	Character of Work.
Quincy-Boston . . .	Old Colony Boulevard (ch. 35, Resolves of 1922).	Estimates for bridge with draw span, 1,500 feet long.

*Examinations, Reports, Estimates, etc., at Request of County Commissioners.*

CITIES AND TOWNS.	Locality.	Character of Work.
Barre . . . . .	Over Ware River . . .	On condition of bridge and reconstruction necessary.
Dover-Needham . . .	Over Charles River . . .	2-span concrete beam, each span 31 feet. Construction supervised.
Reading . . . . .	Lowell Street, Boston & Maine bridge.	Reconstruction.
Stow . . . . .	Over Assabet River, near Gleasondale Mills.	Reconstruction of two bridges.

*Other Examinations and Reports by Direction of the Department.*

CITIES AND TOWNS.	Locality.	Subject.
Cambridge . . . . .	Over Charles River . . .	Examination of structure and condition of floor, Harvard bridge.
Haverhill . . . . .	Over Merrimack River (Bradford line).	On condition and strength of bridge.
Lowell . . . . .	At First Street . . . . .	Culverts for water main.
Monterey . . . . .	Over Brook . . . . .	Repairs needed on small bridge.
Newbury . . . . .	Over Parker River . . .	Widening of 4-span concrete beam, each span 45 feet.
North Reading . . .	Railroad bridge . . . . .	Necessary repairs.
Wareham . . . . .	Weweantic River . . . . .	Repairs to Tremont bridge.
Wareham . . . . .	Butler's Crossing . . . . .	Repairs to bridge.
West Brookfield . . .	Makepeace Crossing, Boston & Albany Railroad.	Reconstruction of bridge.
Winchendon . . . . .	Over Millers River . . .	Condition and reconstruction of two bridges.

## BRIDGE OVER THE MERRIMACK RIVER BETWEEN NEWBURYPORT AND SALISBURY.

The charge of this bridge was placed in the Massachusetts Highway Commission, and the same made a State highway by the provisions of chapter 716, Acts of 1912, which also provided that the expense of keeping the bridge in good repair for

travel, of operating the draw and of maintaining the bridge shall be paid by the Commonwealth.

The expenditures for 1922 were \$8,465.94.

The total expenditures from 1912 to 1922, inclusive, were \$78,423.38.

#### BRIDGE OVER TAUNTON GREAT RIVER BETWEEN FALL RIVER AND SOMERSET.

The charge of this bridge was placed in the Massachusetts Highway Commission, and the same made a State highway by the provisions of chapter 717, Acts of 1912, which also provided that the expense of keeping the bridge in good repair for travel, and of operating the draw and maintaining the bridge shall be paid by the Commonwealth; furthermore, that the expense incurred and to be incurred by the county of Bristol in restoring the bridge to a sound condition and in making it suitable for travel shall be borne by the Commonwealth.

The expenditures for 1922 were \$13,988.90.

The total expenditures from 1912 to 1922, inclusive, were \$169,561.70.

#### CONSTRUCTION AND REPAIR OF TOWN AND COUNTY WAYS.

(Section 34, chapter 90, General Laws, as revised by section 1<sup>1</sup>, chapter 112, Acts of 1921.)

During the year the Division has contracted for work to be done in the towns named in the following table, which also shows the type of road, the length contracted for, and the allotments or contributions by the State, towns and counties: —

COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
<i>Barnstable County.</i>					
Brewster . . .	\$3,000 00	\$3,000 00	—	Bituminous concrete .	7,154
Falmouth . . .	7,500 00	2,500 00	—	Bridge and approaches .	625
Falmouth . . .	600 00	600 00	—	Bituminous concrete .	2,175
Mashpee . . .	873 39	873 39	\$873 39	Grading . . . . .	20,259
Yarmouth . . .	30,000 00	30,000 00	—	Bituminous macadam .	18,750

COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
<i>Berkshire County.</i>					
Hancock . . . . .	\$750 00 <sup>1</sup> 1,250 00	-	\$1,000 00	Gravel . . . . .	3,950
Monterey . . . . .	1,300 00 <sup>1</sup> 3,700 00	-	4,000 00	Gravel . . . . .	1,300
Monterey . . . . .	500 00	\$500 00	-	Repairs and oiling . .	13,728
New Marlborough . . . . .	2,125 00 <sup>1</sup> 1,375 00	1,500 00	2,000 00	Gravel . . . . .	2,800
Otis . . . . .	1,400 00 <sup>1</sup> 4,100 00	500 00	4,500 00	Gravel . . . . .	3,600
Richmond . . . . .	900 00 <sup>1</sup> 600 00	1,000 00	-	Grading . . . . .	600
Tyringham . . . . .	625 00 <sup>1</sup> 375 00	1,000 00	1,000 00	Water-bound macadam .	1,217
West Stockbridge . . . . .	950 00 <sup>1</sup> 1,050 00	2,000 00	2,000 00	Gravel . . . . .	3,050
<i>Bristol County.</i>					
Acushnet . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	3,200
Acushnet . . . . .	600 00	600 00	600 00	Repairs and oiling . .	15,840
Berkley . . . . .	1,500 00	1,500 00	-	Repairs and oiling . .	33,205
Dartmouth . . . . .	5,000 00	5,000 00	-	Bituminous macadam .	5,250
Dighton . . . . .	7,000 00	14,000 00	-	Water-bound macadam .	4,646
Easton . . . . .	4,000 00	4,000 00	-	Bituminous macadam .	1,400
Freetown . . . . .	1,000 00	1,000 00	-	Repairs and oiling . .	14,475
Raynham . . . . .	1,100 00 <sup>1</sup> 1,900 00	3,000 00	\$3,000 00	Bituminous macadam .	1,760
<i>Dukes County.</i>					
Chilmark . . . . .	12,000 00	6,000 00	6,000 00	Bituminous concrete .	8,556
<i>Essex County.</i>					
Amesbury . . . . .	10,000 00	10,000 00	10,000 00	Bituminous macadam .	4,350
Boxford . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	1,485
Danvers . . . . .	10,000 00	10,000 00	10,000 00	Bituminous macadam .	4,900
Essex . . . . .	1,800 00	1,800 00	-	Repairs and oiling . .	38,121
Georgetown . . . . .	2,500 00	2,500 00	2,500 00	Gravel . . . . .	6,400
Merrimac . . . . .	2,500 00	500 00	-	Repairs and oiling . .	3,200
Methuen . . . . .	10,000 00	10,000 00	10,000 00	Bituminous macadam .	3,806
Middleton . . . . .	20,000 00	-	20,000 00	{ Bituminous macadam .	5,583
				{ Bridge and approaches .	100

<sup>1</sup> Allotment made from funds available under the provisions of sections 26 to 29, chapter 81 of the General Laws.



COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
<i>Franklin County.</i>					
Ashfield . . .	\$1,000 00	\$1,000 00	-	Gravel . . . . .	700
Buckland . . .	3,500 00	3,500 00	-	Gravel . . . . .	2,600
Monroe . . . {	450 00 <sup>1</sup>	1,000 00	-	Gravel . . . . .	1,900
	550 00				
Montague . . .	2,000 00	2,500 00	-	Gravel . . . . .	4,500
Orange . . . .	1,000 00	1,000 00	-	Gravel . . . . .	1,800
Whately . . . .	3,000 00	3,000 00	-	{ Bituminous macadam .	1,247
				{ Gravel . . . . .	400
<i>Hampden County.</i>					
Brimfield . . .	5,000 00	-	-	Gravel . . . . .	4,300
East Longmeadow	4,200 00	4,200 00	-	Gravel . . . . .	4,590
Longmeadow . .	40,000 00	20,000 00	\$20,000 00	Cement concrete . .	6,200
West Springfield .	35,000 00	35,000 00	35,000 00	Cement concrete . .	9,994
Wilbraham . . .	10,000 00	10,000 00	-	Bituminous macadam .	6,313
<i>Hampshire County.</i>					
Hatfield . . . .	5,000 00	5,000 00	-	Bituminous macadam .	2,763
Worthington . . {	1,775 00 <sup>1</sup>	1,000 00	-	Repairs and oiling . .	31,680
	1,225 00				
<i>Middlesex County.</i>					
Acton . . . . .	10,000 00	10,000 00	\$10,000 00	Bituminous macadam .	3,400
Ashby . . . . {	1,425 00 <sup>1</sup>	2,350 00	2,350 00	Gravel . . . . .	4,375
	925 00				
Ashland . . . {	500 00 <sup>1</sup>	2,500 00	2,500 00	Bituminous macadam .	900
	2,000 00				
Ayer . . . . .	6,000 00	6,000 00	6,000 00	Bituminous macadam .	3,300
Bedford . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	1,560
Bedford . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	2,000
Boxborough . . .	500 00	500 00	500 00	Gravel . . . . .	1,100
Burlington . . .	1,100 00	1,100 00	1,100 00	Repairs and oiling . .	17,952
Burlington . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	3,250
Carlisle . . . .	500 00	500 00	500 00	Gravel . . . . .	1,000
Chelmsford . . .	17,000 00	17,000 00	17,000 00	Bituminous macadam .	9,700
Dracut . . . . .	2,000 00	2,000 00	2,000 00	Bituminous macadam .	1,000
Dunstable . . . .	1,750 00	1,750 00	1,750 00	Repairs and oiling . .	38,016
Framingham . . .	2,300 00	2,300 00	2,300 00	Gravel . . . . .	3,000
Framingham . . .	4,200 00	4,200 00	4,200 00	Bituminous macadam .	2,200
Holliston . . . .	2,500 00	2,500 00	2,500 00	Gravel . . . . .	3,200

<sup>1</sup> Allotment made from funds available under the provisions of sections 26 to 29, chapter 81 of the General Laws.

COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Contracted for (Feet).
	State.	Town.	County.		
<i>Middlesex County—</i> Con.					
Hopkinton . . .	\$4,000 00	\$4,000 00	\$4,000 00	Water-bound macadam .	3,000
Hudson . . .	3,300 00	3,300 00	3,300 00	Gravel . . . . .	4,110
Lexington . . .	20,000 00	25,000 00	20,000 00	Bituminous macadam .	9,952
Lincoln . . .	7,500 00	7,500 00	7,500 00	Bituminous macadam .	4,800
Littleton . . .	2,000 00 <sup>1</sup>	2,000 00	2,000 00	Gravel . . . . .	5,000
Maynard . . .	4,500 00	4,500 00	4,500 00	Bridge . . . . .	96
Maynard . . .	1,500 00	1,500 00	1,500 00	Gravel . . . . .	2,700
Natick . . .	2,000 00	2,000 00	2,000 00	Bituminous macadam .	2,500
North Reading .	1,200 00	1,200 00	1,200 00	Repairs and oiling . .	48,840
Pepperell . . .	1,400 00	1,400 00	1,400 00	Gravel . . . . .	2,000
Shirley . . .	17,500 00	17,500 00	17,500 00	Bituminous macadam .	7,850
Stow . . . {	1,150 00 <sup>1</sup>	2,500 00	2,500 00	Bituminous macadam .	1,500
	1,350 00				
Sudbury . . .	4,000 00	4,000 00	4,000 00	Gravel . . . . .	8,700
Sudbury . . .	1,600 00	1,600 00	1,600 00	Repairs and oiling . .	29,832
Tyngsborough .	500 00	500 00	500 00	Repairs and oiling . .	23,760
Wakefield . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam .	2,000
Wayland . . .	4,000 00	4,000 00	4,000 00	Repairs and oiling . .	55,440
Westford . . .	2,250 00	2,250 00	2,250 00	Repairs and oiling . .	40,900
Wilmington . {	1,100 00 <sup>1</sup>	2,000 00	2,000 00	Water-bound macadam .	2,000
	900 00				
<i>Norfolk County.</i>					
Foxborough . .	10,000 00	10,000 00	10,000 00	Bituminous macadam .	6,000
Franklin . . .	4,000 00	4,000 00	4,000 00	Gravel . . . . .	4,600
Holbrook . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	1,850
Medway . . .	3,000 00	3,000 00	3,000 00	Gravel . . . . .	4,377
Millis . . .	1,000 00	1,000 00	1,000 00	Repairs and oiling . .	22,958
Millis . . .	3,000 00	3,000 00	3,000 00	Gravel . . . . .	3,900
Norfolk . . . {	1,125 00 <sup>1</sup>	2,500 00	2,500 00	Gravel . . . . .	3,800
	1,375 00				
Norwood . . .	5,000 00	10,000 00	5,000 00	Bituminous macadam .	4,400
Sharon . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam .	1,645
Stoughton . . .	8,000 00	8,000 00	8,000 00	Bituminous macadam .	4,665
Walpole . . .	5,000 00	11,000 00	5,000 00	Bituminous concrete .	8,037
Westwood . . .	4,000 00	8,000 00	4,000 00	Bituminous macadam .	3,400
Wrentham . . .	3,500 00	3,500 00	3,500 00	Gravel . . . . .	4,550
Wrentham . . .	2,500 00	2,500 00	2,500 00	Bituminous macadam .	1,225

<sup>1</sup> Allotment made from funds available under the provisions of sections 26 to 29, chapter 81 of the General Laws.

COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Contracted for (Feet).
	State.	Town.	County.		
<i>Plymouth County.</i>					
Abington . . .	\$6,600 00	\$6,600 00	\$6,600 00	Bituminous macadam .	5,629
Bridgewater . .	1,330 00	1,330 00	1,330 00	Bituminous macadam .	1,255
Carver . . .	3,500 00	3,500 00	—	Bituminous concrete .	3,091
Hanson . . .	4,000 00	4,000 00	4,000 00	Water-bound macadam .	4,875
Norwell . . .	5,000 00	5,000 00	5,000 00	Water-bound macadam .	8,055
Plymouth . . .	3,000 00	6,000 00	3,000 00	Bridge and approaches .	393
Rockland . . .	7,000 00	7,000 00	7,000 00	Bituminous macadam .	5,425
West Bridgewater .	5,000 00	5,000 00	—	Bituminous concrete .	1,900
<i>Worcester County.</i>					
Ashburnham . .	16,000 00	8,000 00	8,000 00	Bituminous macadam .	4,221
Berlin . . .	$\left\{ \begin{array}{l} 975\ 00^1 \\ 2,525\ 00 \end{array} \right\}$	3,500 00	3,500 00	Bituminous macadam .	4,000
Boylston . . .				Repairs and oiling . .	38,016
Dudley . . .	400 00	400 00	—	Repairs and oiling . .	8,800
Gardner . . .	2,500 00	2,500 00	—	Bituminous macadam .	1,700
Holden . . .	30,000 00	10,500 00	19,500 00	Bituminous macadam .	7,606
Leicester . . .	12,000 00	12,000 00	12,000 00	Bituminous macadam .	4,300
Milford . . .	10,000 00	10,000 00	10,000 00	Bituminous macadam .	6,540
New Braintree	$\left\{ \begin{array}{l} 1,250\ 00^1 \\ 4,750\ 00 \end{array} \right\}$	2,000 00	6,000 00	Bituminous macadam .	2,600
Northborough . .				Bituminous macadam .	1,980
Paxton . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	3,000
Petersham . . .	$\left\{ \begin{array}{l} 1,750\ 00^1 \\ 750\ 00 \end{array} \right\}$	2,500 00	2,500 00	Gravel . . . . .	3,900
Shrewsbury . . .				Bituminous macadam .	2,850
Sutton . . .	30,000 00	10,000 00	20,000 00	Cement concrete . . .	6,133
Westborough . .	5,000 00	5,000 00	5,000 00	Bituminous macadam .	2,300
West Brookfield .	225 00	225 00	—	Repairs and oiling . .	4,106

<sup>1</sup> Allotment made from funds available under the provisions of sections 26 to 29, chapter 81 of the General Laws.

The expenditures during the year in various counties were:—

COUNTY.	Amount.
Barnstable . . . . .	\$35,181 39
Berkshire . . . . .	31,221 90
Bristol . . . . .	30,580 68



COUNTY.	Amount.
Dukes . . . . .	\$10,916 28
Essex . . . . .	53,850 62
Franklin . . . . .	41,867 95
Hampden . . . . .	125,399 92
Hampshire . . . . .	8,026 44
Middlesex . . . . .	131,989 02
Norfolk . . . . .	67,590 07
Plymouth . . . . .	48,423 35
Suffolk . . . . .	27 16
Worcester . . . . .	117,140 55

Details of the foregoing expenditures follow: —

*Barnstable County.*

Brewster . . . . .	\$3,000 00
Falmouth . . . . .	10,285 99
Mashpee . . . . .	1,395 40
Sandwich . . . . .	1,000 00
Yarmouth . . . . .	19,500 00

*Berkshire County.*

Egremont . . . . .	288 24
Hancock . . . . .	1,250 00
Hinsdale . . . . .	4,521 26
Lanesborough . . . . .	7,262 70
Monterey . . . . .	4,170 74
New Ashford . . . . .	602 18
New Marlborough . . . . .	2,375 00
Otis . . . . .	500 00
Peru . . . . .	5,679 21
Richmond . . . . .	600 00
Tyringham . . . . .	375 00
West Stockbridge . . . . .	3,050 00
Williamstown . . . . .	547 57

*Bristol County.*

Acushnet . . . . .	5,600 00
Berkley . . . . .	1,500 00
Dartmouth . . . . .	5,920 32
Dighton . . . . .	7,000 00
Easton . . . . .	4,760 89
Freetown . . . . .	1,000 00
Raynham . . . . .	1,900 00
Seekonk . . . . .	2,899 47

*Dukes County.*

Chilmark . . . . .	\$10,916 28
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*Essex County.*

Amesbury . . . . .	5,000 00
Boxford . . . . .	1,000 00
Danvers . . . . .	2,353 99
Essex . . . . .	9,800 00
Georgetown . . . . .	5,000 00
Lynnfield . . . . .	2,963 34
Marblehead . . . . .	356 79
Methuen . . . . .	6,692 57
Middleton . . . . .	19,832 16
Swampscott . . . . .	851 77

*Franklin County.*

Ashfield . . . . .	26,001 46
Bernardston . . . . .	6,469 67
Buckland . . . . .	1,500 00
Colrain . . . . .	800 00
Conway . . . . .	1,602 15
Monroe . . . . .	546 20
New Salem . . . . .	3,464 02
Orange . . . . .	984 45
Wendell . . . . .	500 00

*Hampden County.*

Agawam . . . . .	28,406 57
Brimfield . . . . .	3,683 34
East Longmeadow . . . . .	6,097 88
Holyoke . . . . .	11,287 63
Longmeadow . . . . .	32,000 00
Monson . . . . .	2,427 95
Westfield . . . . .	680 85
West Springfield . . . . .	25,819 47
Wilbraham . . . . .	14,996 23

*Hampshire County.*

Belchertown . . . . .	1,926 08
Hatfield . . . . .	5,000 00
Worthington . . . . .	1,100 36

*Middlesex County.*

Acton . . . . .	10,937 99
Ashby . . . . .	1,000 00
Ashland . . . . .	2,010 80
Ayer . . . . .	5,777 44
Bedford . . . . .	6,080 64

Boxborough . . . . .	\$700 00
Burlington . . . . .	4,693 77
Carlisle . . . . .	500 00
Chelmsford . . . . .	16,657 32
Dracut . . . . .	2,000 00
Dunstable . . . . .	1,750 00
Framingham . . . . .	6,944 95
Holliston . . . . .	4,000 00
Hopkinton . . . . .	4,000 00
Hudson . . . . .	3,300 00
Lexington . . . . .	10,900 00
Lincoln . . . . .	6,683 33
Littleton . . . . .	2,954 69
Maynard . . . . .	4,514 76
Natick . . . . .	2,166 64
North Reading . . . . .	1,131 74
Pepperell . . . . .	1,400 00
Shirley . . . . .	13,257 30
Stow . . . . .	1,350 00
Sudbury . . . . .	2,700 00
Tyngsborough . . . . .	500 00
Wakefield . . . . .	2,999 57
Wayland . . . . .	5,662 93
Westford . . . . .	4,515 15
Wilmington . . . . .	900 00

*Norfolk County.*

Braintree . . . . .	1,911 65
Canton . . . . .	2,948 51
Foxborough . . . . .	4,940 81
Franklin . . . . .	4,000 00
Holbrook . . . . .	6,468 99
Medway . . . . .	3,000 00
Millis . . . . .	3,052 15
Norfolk . . . . .	1,868 59
Norwood . . . . .	5,000 00
Randolph . . . . .	885 92
Sharon . . . . .	3,408 93
Stoughton . . . . .	13,168 02
Walpole . . . . .	6,151 35
Wrentham . . . . .	10,785 15

*Plymouth County.*

Abington . . . . .	6,600 00
Bridgewater . . . . .	1,330 00
Carver . . . . .	6,500 00
East Bridgewater . . . . .	2,416 67
Hanover . . . . .	1,500 00



Hanson . . . . .	\$3,999 82
Norwell . . . . .	718 00
Pembroke . . . . .	8,320 17
Plympton . . . . .	4,959 85
Rockland . . . . .	7,000 00
Wareham . . . . .	78 84
West Bridgewater . . . . .	5,000 00

*Suffolk County.*

Revere . . . . .	27 16
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*Worcester County.*

Barre . . . . .	2,000 00
Bolton . . . . .	1,000 00
Boylston . . . . .	2,000 00
Dana . . . . .	700 00
Dudley . . . . .	1,224 19
Gardner . . . . .	2,500 00
Hardwick . . . . .	20,000 00
Harvard . . . . .	9,000 00
Holden . . . . .	42,906 91
Leicester . . . . .	3,836 18
Mendon . . . . .	490 23
Milford . . . . .	7,947 33
Millbury . . . . .	6,000 00
New Braintree . . . . .	2,869 80
Northborough . . . . .	1,900 00
Oxford . . . . .	1,300 00
Petersham . . . . .	1,070 43
Shrewsbury . . . . .	3,670 48
Sterling . . . . .	2,000 00
West Brookfield . . . . .	225 00
Westborough . . . . .	3,500 00
Westminster . . . . .	1,000 00

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\$702,215 33

Engineering . . . . .	36,594 11
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Total . . . . . \$738,809 44

## HIGHWAYS IN THE FIVE WESTERN COUNTIES.

(Chapter 221, General Acts of 1915.)

Chapter 572, Acts of 1920, provided that —

For the purpose of completing the construction of certain highways in the five western counties under the provisions of chapter two hundred and twenty-one of the General Acts of nineteen hundred and fifteen, the

division of highways of the department of public works, may expend an additional sum of one million dollars before November thirtieth, nineteen hundred and twenty-four.

The total expenditures during the year for the construction of highways in Sheffield; Windsor and Dalton; Otis and Sandisfield; Washington; Worthington and Huntington; Worthington and Hinsdale; Plainfield and Cummington; Belchertown, Palmer, Ware and Enfield; Southwick and Granville; Ashfield; Gill; Barre and Oakham; Warwick; Chesterfield; and Middlefield were \$246,253.20, details of which follow: —

*Route No. 1.*

Sheffield . . . . .	\$49 81
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*Route No. 2.*

Windsor . . . . .	3,499 09
Dalton . . . . .	3,499 09

*Route No. 3.*

Otis . . . . .	135 76
Sandisfield . . . . .	135 76

*Route No. 4.*

Washington . . . . .	27,174 79
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*Route No. 5.*

Worthington . . . . .	1,031 78
Huntington . . . . .	7,372 90

*Route No. 6.*

Worthington . . . . .	1,960 62
Hinsdale . . . . .	45 51

*Route No. 7.*

Plainfield . . . . .	45,080 37
Cummington . . . . .	26,475 77

*Route No. 8.*

Belchertown . . . . .	792 68
Palmer . . . . .	39 45
Ware . . . . .	39 45
Enfield . . . . .	2,416 36

*Route No. 9.*

Southwick . . . . .	44,433 45
Granville . . . . .	81 10

*Route No. 10.*

Ashfield . . . . .	413 64
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<i>Route No. 11.</i>			
Gill . . . . .			\$26,173 30
<i>Route No. 12.</i>			
Barre . . . . .			19,992 61
Oakham . . . . .			1,977 29
<i>Route No. 14.</i>			
Warwick . . . . .			361 96
<i>Route No. 17.</i>			
Chesterfield . . . . .			27,283 02
Middlefield . . . . .			5,787 64
Total . . . . .			\$246,253 20

CONSTRUCTION AND REPAIR OF WAYS NOT STATE HIGHWAYS IN CERTAIN TOWNS.

(Section 23, <sup>1</sup> chapter 81, General Laws.)

During the year the Division contracted for work to be done in the town named in the following table, which also shows the type of road, the length contracted for, and the allotment or contribution made by the State and town:—

TOWN.	CONTRIBUTIONS.		Type of Road.	Length contracted for (Feet).
	State.	Town.		
Nantucket . . . . .	\$30,000	\$20,000	Bituminous concrete .	21,297

The expenditures during the year in various towns in Berkshire, Hampden and Nantucket counties were as follows:—

<i>Berkshire County.</i>			
Mount Washington . . . . .			\$854 53
<i>Hampden County.</i>			
Granville . . . . .			455 75
Palmer . . . . .			315 96
Wilbraham . . . . .			550 31
<i>Nantucket County.</i>			
Nantucket . . . . .			11,555 04
Total . . . . .			\$13,731 59

<sup>1</sup> Printed in report for 1921, page 82.



REPAIR AND IMPROVEMENT OF PUBLIC WAYS, EXCLUSIVE  
OF STATE HIGHWAYS, IN CERTAIN TOWNS.

(Sections 26 to 29 and 31 of chapter 81 of the General Laws, as amended, with reference to section 26, by section 1 of chapter 120, Acts of 1921, and by chapter 281, Acts of 1922.)

The amendment of section 26 aforesaid, in 1922, was as follows: —

Section twenty-six of chapter eighty-one of the General Laws is hereby amended by striking out, in the fifth line, the word “fifty”, and inserting in place thereof the word: — seventy, — by striking out, in the sixth line, the word “fifty”, and inserting in place thereof the word: — seventy-five, — and by inserting after the word “dollars”, in the twenty-sixth line, the following new paragraphs: — 9. Fifty thousand dollars and less than sixty thousand dollars, one hundred and fifty dollars. 10. Sixty thousand dollars and less than seventy thousand dollars, one hundred and seventy-five dollars, — so as to read as follows: — *Section 26.* There may be expended for the repair and improvement of public ways, other than state highways, in towns the valuation of which is less than three million dollars and in which the amount of such valuation, divided by the number of miles of such public ways, hereinafter referred to as the road mileage valuation, is less than seventy thousand dollars, such sums, not exceeding seventy-five dollars per mile, as the general court may appropriate therefor; provided, that such towns shall contribute or make available for use in connection therewith the following amounts for each mile of said public ways within their respective limits, according to the following schedule based on their road mileage valuation:

1. Less than five thousand dollars, twelve dollars and fifty cents.
2. Five thousand dollars and less than seven thousand five hundred dollars, fifteen dollars.
3. Seven thousand five hundred dollars and less than ten thousand dollars, twenty-five dollars.
4. Ten thousand dollars and less than fifteen thousand dollars, forty dollars.
5. Fifteen thousand dollars and less than twenty thousand dollars, fifty dollars.
6. Twenty thousand dollars and less than thirty thousand dollars, seventy-five dollars.
7. Thirty thousand dollars and less than forty thousand dollars, one hundred dollars.
8. Forty thousand dollars and less than fifty thousand dollars, one hundred and twenty-five dollars.
9. Fifty thousand dollars and less than sixty thousand dollars, one hundred and fifty dollars.
10. Sixty thousand dollars and less than seventy thousand dollars, one hundred and seventy-five dollars.

The amounts appropriated as aforesaid and contributed by the towns shall be expended under the direction of the division on such ways as the division and the selectmen of the towns may agree upon.

[Approved April 13, 1922.]

During the year the Division has contracted for work to be done in the towns named in the following table, which also shows the allotments or contributions by the State and towns:—

COUNTIES AND TOWNS.	ALLOTMENTS.	
	State.	Town.
<b>Barnstable County:</b>		
Eastham . . . . .	\$1,950 00	\$1,950 00
Truro . . . . .	3,100 00	2,480 00
Wellfleet . . . . .	1,750 00	2,625 00
<b>Berkshire County:</b>		
Alford . . . . .	1,400 00	1,200 00
Becket . . . . .	3,000 00	2,400 00
Cheshire . . . . .	4,050 00	5,050 00
Egremont . . . . .	1,550 00	2,325 00
Florida . . . . .	2,100 00	4,200 00
Hancock . . . . .	1,500 00	1,200 00
Hinsdale . . . . .	1,800 00	2,700 00
Lanesborough . . . . .	2,050 00	3,075 00
Monterey . . . . .	2,600 00	1,300 00
Mount Washington . . . . .	1,550 00	1,525 00
New Marlborough . . . . .	4,250 00	4,250 00
Otis . . . . .	2,800 00	840 00
Peru . . . . .	1,800 00	900 00
Richmond . . . . .	1,800 00	1,800 00
Sandisfield . . . . .	4,350 00	1,305 00
Savoy . . . . .	2,800 00	700 00
Sheffield . . . . .	4,850 00	5,850 00
Tyringham . . . . .	1,250 00	1,250 00
Washington . . . . .	3,000 00	1,750 00
West Stockbridge . . . . .	1,900 00	2,850 00
Windsor . . . . .	3,300 00	990 00
<b>Bristol County:</b>		
Berkley . . . . .	2,400 00	2,400 00
Freetown . . . . .	3,150 00	4,725 00
Norton . . . . .	2,850 00	5,700 00
Raynham . . . . .	2,200 00	4,400 00
Rehoboth . . . . .	6,550 00	8,050 00
<b>Essex County:</b>		
Boxford . . . . .	3,500 00	5,750 00
West Newbury . . . . .	1,950 00	2,925 00
<b>Franklin County:</b>		
Ashfield . . . . .	5,100 00	4,280 00
Bernardston . . . . .	2,050 00	2,050 00
Charlemont . . . . .	2,500 00	2,500 00
Colrain . . . . .	5,750 00	5,750 00
Conway . . . . .	4,700 00	3,960 00
Hawley . . . . .	2,450 00	735 00
Heath . . . . .	2,700 00	810 00
Leverett . . . . .	2,400 00	2,020 00
Leyden . . . . .	2,050 00	615 00
Monroe . . . . .	900 00	1,350 00
New Salem . . . . .	3,200 00	1,600 00
Northfield . . . . .	3,550 00	5,325 00
Rowe . . . . .	2,050 00	615 00
Shutesbury . . . . .	2,200 00	1,200 00
Sunderland . . . . .	1,700 00	2,550 00
Warwick . . . . .	3,600 00	2,220 00
Whately . . . . .	2,050 00	3,075 00

COUNTIES AND TOWNS.	ALLOTMENTS.	
	State.	Town.
<b>Hampden County:</b>		
Blandford . . . . .	\$5,900 00	\$5,570 00
Brimfield . . . . .	3,200 00	2,560 00
Chester . . . . .	4,450 00	4,850 00
Granville . . . . .	3,750 00	1,875 00
Hampden . . . . .	2,200 00	1,860 00
Holland . . . . .	1,550 00	465 00
Monson . . . . .	5,650 00	5,650 00
Montgomery . . . . .	2,100 00	2,000 00
Southwick . . . . .	4,775 00	4,775 00
Tolland . . . . .	2,900 00	930 00
Wales . . . . .	1,200 00	1,200 00
<b>Hampshire County:</b>		
Belchertown . . . . .	7,600 00	9,680 00
Chesterfield . . . . .	2,650 00	1,325 00
Cummington . . . . .	2,650 00	1,325 00
Enfield . . . . .	1,850 00	2,775 00
Goshen . . . . .	1,850 00	1,240 00
Granby . . . . .	3,300 00	3,300 00
Greenwich . . . . .	2,450 00	2,060 00
Huntington . . . . .	2,350 00	3,725 00
Middlefield . . . . .	1,800 00	900 00
Pelham . . . . .	2,000 00	1,600 00
Plainfield . . . . .	2,400 00	720 00
Prescott . . . . .	2,150 00	785 00
Southampton . . . . .	3,850 00	3,140 00
Westhampton . . . . .	2,200 00	660 00
Williamsburg . . . . .	2,100 00	3,150 00
Worthington . . . . .	3,550 00	1,065 00
<b>Middlesex County:</b>		
Acton . . . . .	3,450 00	6,900 00
Ashby . . . . .	2,850 00	2,850 00
Ashland . . . . .	538 00	1,350 00
Boxborough . . . . .	1,300 00	1,040 00
Carlisle . . . . .	3,000 00	1,500 00
Dunstable . . . . .	1,750 00	1,400 00
Holliston . . . . .	3,675 00	7,350 00
Hopkinton . . . . .	2,300 00	4,500 00
Littleton . . . . .	2,100 00	4,200 00
Sherborn . . . . .	3,500 00	7,000 00
Stow . . . . .	2,250 00	4,500 00
Townsend . . . . .	3,200 00	6,400 00
Tyngsborough . . . . .	1,700 00	2,550 00
Wilmington . . . . .	2,200 00	6,600 00
<b>Norfolk County:</b>		
Bellingham . . . . .	2,050 00	5,125 00
Medway . . . . .	3,675 00	8,575 00
Norfolk . . . . .	2,250 00	4,500 00
<b>Plymouth County:</b>		
Halifax . . . . .	1,600 00	2,400 00
Lakeville . . . . .	3,600 00	2,400 00
Plympton . . . . .	1,700 00	1,700 00
Rochester . . . . .	2,400 00	3,600 00
<b>Worcester County:</b>		
Ashburnham . . . . .	3,700 00	3,700 00
Berlin . . . . .	1,950 00	2,925 00
Bolton . . . . .	3,100 00	3,600 00
Boylston . . . . .	1,950 00	1,950 00
Brookfield . . . . .	1,800 00	3,600 00
Charlton . . . . .	5,850 00	4,560 00
Dana . . . . .	2,900 00	3,160 00
Douglas . . . . .	3,450 00	5,175 00
Harvard . . . . .	2,800 00	5,600 00
Holden . . . . .	3,850 00	7,700 00
Hubbardston . . . . .	3,800 00	3,040 00
Lunenburg . . . . .	3,250 00	4,875 00
Mendon . . . . .	2,400 00	3,850 00
New Braintree . . . . .	2,450 00	1,960 00
Northborough . . . . .	2,750 00	5,500 00
Oakham . . . . .	2,250 00	1,125 00
Oxford . . . . .	400 00	435 00
Paxton . . . . .	1,450 00	1,450 00



COUNTIES AND TOWNS.	ALLOTMENTS.	
	State.	Town.
Worcester County — <i>Con.</i>		
Petersham . . . . .	\$3,500 00	\$3,500 00
Phillipston . . . . .	2,050 00	1,025 00
Princeton . . . . .	4,100 00	4,600 00
Royalston . . . . .	3,350 00	3,350 00
Rutland . . . . .	3,550 00	3,550 00
Sterling . . . . .	3,650 00	5,475 00
Sturbridge . . . . .	3,950 00	3,950 00
Sutton . . . . .	800 00	1,200 00
Templeton . . . . .	3,400 00	6,800 00
Upton . . . . .	2,950 00	4,425 00
West Brookfield . . . . .	4,000 00	3,500 00
Westminster . . . . .	3,850 00	3,850 00

The expenditures during 1922 in various counties were:—

COUNTY.	Amount.
Barnstable . . . . .	\$7,762 08
Berkshire . . . . .	58,229 15
Bristol . . . . .	19,568 45
Essex . . . . .	3,570 00
Franklin . . . . .	51,324 32
Hampden . . . . .	36,010 93
Hampshire . . . . .	43,667 90
Middlesex . . . . .	37,251 20
Norfolk . . . . .	10,142 15
Plymouth . . . . .	8,739 72
Worcester . . . . .	91,669 94

Details of the foregoing expenditures follow:—

<i>Barnstable County.</i>	
Eastham . . . . .	\$3,200 00
Truro . . . . .	3,676 15
Wellfleet . . . . .	885 93
<i>Berkshire County.</i>	
Alford . . . . .	1,400 00
Becket . . . . .	2,033 01
Cheshire . . . . .	4,050 00
Egremont . . . . .	1,318 34
Florida . . . . .	2,100 00
Hancock . . . . .	2,389 01
Hinsdale . . . . .	2,712 10
Lanesborough . . . . .	2,609 42
Monterey . . . . .	2,222 66
Mount Washington . . . . .	1,457 21
New Marlborough . . . . .	5,556 60
Otis . . . . .	2,392 79
Peru . . . . .	2,510 83

Richmond . . . . .	\$2,700 00
Sandisfield . . . . .	4,497 39
Savoy . . . . .	2,840 05
Sheffield . . . . .	5,346 75
Tyringham . . . . .	1,788 99
Washington . . . . .	2,394 29
West Stockbridge . . . . .	2,680 48
Windsor . . . . .	3,229 23

*Bristol County.*

Berkley . . . . .	2,400 00
Freetown . . . . .	3,150 00
Norton . . . . .	3,370 18
Raynham . . . . .	4,298 27
Rehoboth . . . . .	6,350 00

*Essex County.*

Boxford . . . . .	3,120 00
West Newbury . . . . .	450 00

*Franklin County.*

Ashfield . . . . .	5,087 88
Bernardston . . . . .	2,015 27
Charlemont . . . . .	2,425 00
Colrain . . . . .	5,523 87
Conway . . . . .	4,550 00
Hawley . . . . .	2,469 87
Heath . . . . .	2,700 00
Leverett . . . . .	2,624 43
Leyden . . . . .	2,050 00
Monroe . . . . .	1,350 00
New Salem . . . . .	4,900 00
Northfield . . . . .	3,940 18
Rowe . . . . .	2,050 00
Shutesbury . . . . .	2,271 25
Sunderland . . . . .	1,598 20
Warwick . . . . .	3,625 00
Wendell . . . . .	75 00
Whately . . . . .	2,068 37

*Hampden County.*

Blandford . . . . .	5,678 55
Brimfield . . . . .	3,978 34
Chester . . . . .	3,921 94
Granville . . . . .	4,073 52
Hampden . . . . .	2,214 54
Holland . . . . .	1,551 85

Monson . . . . .	\$4,756 63
Montgomery . . . . .	1,623 27
Southwick . . . . .	4,398 50
Tolland . . . . .	2,747 68
Wales . . . . .	1,066 11

*Hampshire County.*

Belchertown . . . . .	6,915 69
Chesterfield . . . . .	2,451 70
Cummington . . . . .	2,650 00
Enfield . . . . .	1,875 00
Goshen . . . . .	1,600 00
Granby . . . . .	3,400 00
Greenwich . . . . .	1,925 00
Huntington . . . . .	2,093 33
Middlefield . . . . .	1,850 00
Pelham . . . . .	2,000 00
Plainfield . . . . .	2,400 00
Prescott . . . . .	2,150 00
Southampton . . . . .	3,700 00
Ware . . . . .	359 11
Westhampton . . . . .	1,550 00
Williamsburg . . . . .	2,150 00
Worthington . . . . .	4,598 07

*Middlesex County.*

Acton . . . . .	3,315 91
Ashby . . . . .	3,843 56
Ashland . . . . .	500 00
Boxborough . . . . .	1,272 44
Carlisle . . . . .	2,977 30
Dunstable . . . . .	2,211 67
Holliston . . . . .	3,835 00
Hopkinton . . . . .	1,806 55
Littleton . . . . .	2,100 00
Sherborn . . . . .	3,616 06
Stow . . . . .	3,534 64
Townsend . . . . .	3,507 64
Tyngsborough . . . . .	1,887 71
Wilmington . . . . .	3,342 72

*Norfolk County.*

Bellingham . . . . .	3,092 15
Medway . . . . .	3,675 00
Norfolk . . . . .	3,375 00



*Plymouth County.*

Halifax . . . . .	\$1,600 00
Lakeville . . . . .	4,553 67
Rochester . . . . .	2,586 05

*Worcester County.*

Ashburnham . . . . .	3,670 46
Berlin . . . . .	2,035 38
Bolton . . . . .	3,712 63
Boylston . . . . .	2,264 40
Brookfield . . . . .	2,183 28
Charlton . . . . .	5,513 21
Dana . . . . .	3,297 82
Douglas . . . . .	2,949 92
Harvard . . . . .	2,800 00
Holden . . . . .	4,296 64
Hubbardston . . . . .	3,589 92
Lunenburg . . . . .	3,327 19
Mendon . . . . .	2,240 31
New Braintree . . . . .	3,103 09
Northborough . . . . .	1,626 90
Oakham . . . . .	2,329 91
Oxford . . . . .	400 00
Paxton . . . . .	1,244 73
Petersham . . . . .	5,669 98
Phillipston . . . . .	2,123 96
Princeton . . . . .	4,337 59
Royalston . . . . .	3,653 19
Rutland . . . . .	2,987 59
Sterling . . . . .	3,657 55
Sturbridge . . . . .	3,843 29
Sutton . . . . .	1,238 19
Templeton . . . . .	2,776 05
Upton . . . . .	3,038 46
West Brookfield . . . . .	3,712 90
Westminster . . . . .	4,045 40

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 \$367,935 84

Engineering . . . . .	133,603 13
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 Total . . . . . \$501,538 97

## STATE AID IN KEEPING CERTAIN HIGHWAYS OPEN DURING THE WINTER MONTHS.

(Section 11, chapter 84, General Laws.)

Section 11, chapter 84 of the General Laws, provides —

The department of public works may, by furnishing such equipment as it deems desirable and supervising the use of the same, co-operate with the proper officers of cities and towns in keeping open and reasonably passable for vehicles during the winter months such highways as may be selected by said department, with the approval of the proper officers of the city or town in which any such highway is located, having regard to the importance thereof for commercial uses and the co-operation and aid to be rendered by cities, towns and persons in carrying on this work, and for this purpose may accept financial or other assistance from any person; provided, however, that work carried on under this section shall be supplemental to work undertaken and performed by cities and towns under other provisions of law, and that nothing in this section shall render the commonwealth liable for damages for which it is not liable under other provisions of law or relieve cities and towns from keeping their highways clear from ice and snow as required by other provisions of law.

Snow fences were erected during the winter months along the Boston-Springfield, Boston-Lawrence, Springfield-Greenfield, Greenfield-Pittsfield, Pittsfield-North Adams and Pittsfield-Springfield lines of highway, the total length of fences being approximately 15,000 feet.

The Department also furnished certain equipment in accordance with the provisions of section 11 aforesaid.

The expenditure during the year ending Nov. 30, 1922, was \$43,420.15.

THE REGULATION OF ADVERTISING SIGNS AND DEVICES  
WITHIN THE PUBLIC VIEW.

(Sections 29 to 33, <sup>1</sup> chapter 93, General Laws.)

*Legislation.* — By the provision of chapter 545 of the Acts of 1920, approved May 27, 1920, and later consolidated in the General Laws, chapter 93, sections 29 to 33, inclusive, the Division of Highways of the Department of Public Works was directed, within sixty days after the passage of the act, to

make rules and regulations for the proper control and restriction of billboards and other advertising devices on public ways or on private property within public view of any highway, public park or reservation, and authorized, from time to time, to amend, repeal or add to said rules and regulations.

*Rules and Regulations.* — Revised rules and regulations adopted June 29, 1921, to be in force on and after July 1, 1921, were printed in the annual report of the Department of Public Works for 1921, and are still in force.

*Administration — Inspection.* — The administration of this law was commenced April 1, 1921, with a chief inspector and one assistant inspector. During 1922 an additional assistant inspector was appointed, the duties of these inspectors to include the examination of locations for billboards and other advertising devices for which applications are made to the Division for permits.

*Applications, Licenses and Permits.* — During 1922 individuals, firms and corporations to the number of 50 took out applications and received licenses to conduct the business of outdoor advertising within the State. Applications for permits were received from all of these individuals, firms and corporations, also from 59 individuals who were not in the business of outdoor advertising, but only advertising the business which they themselves were carrying on.

The total number of applications for permits received from April 1, 1921, to Nov. 30, 1922, was 11,382. The number of applications received between Dec. 1, 1921, and Nov. 30, 1922, was 1,817, and of this number 1,178 applications were for new locations. On these new applications 758 permits were granted for the erection of advertising signs, and approximately 75 per cent of these permits were for small signs having an area of less than 60 square feet. The remainder of these new applications were either held up on account of hearings, ordinances or by-laws, or have been disapproved.

The total number of permits granted for the maintenance of outdoor advertising signs from April 1, 1921, to Nov. 30, 1922, was 4,741, and the number granted between Dec. 1, 1921, and Nov. 30, 1922, was 3,895.

The total number of permits which were canceled by the advertisers to Nov. 30, 1922, was 232.



The total number of locations which were lost and on which no permits had been granted was 251.

The total number of permits in good standing Nov. 30, 1922, was 4,509.

Permits numbering 2,601 were renewed on Oct. 1, 1922, to expire July 1, 1923.

Forty-seven special permits were granted to circuses and agricultural fairs for the placing of banners, cards, etc., under section 4D of the rules and regulations aforesaid.

Six applications for permits were disapproved by the Division.

*Billboards, Advertising Signs.* — A number of billboards have been relocated, reduced in size or removed in various cities and towns on account of being located at dangerous corners, on complaints of abutters, and for other reasons.

At the request of the Division, 23 advertising signs have been removed by the owners for various reasons, 10 of these being located along the Mohawk Trail, which has been set aside as a scenic highway.

The Division has removed 54 advertising signs in various parts of the State, which had been discontinued by the advertisers or owners of the boards. In all cases where signs were removed permission was obtained from the owners of the property after having received information from the owners of the boards that they did not care to use them any longer.

*Ordinances and By-Laws.* — Ordinances and by-laws to the number of 17 have been submitted by the following cities and towns for approval: —

Arlington.	Hingham.	Springfield.
Dartmouth.	Milton.	Watertown.
Dedham.	Natick.	Westfield.
Framingham.	Newton.	Winchester.
Great Barrington.	Quincy.	Winthrop.
Groton.	Sharon.	

Of the ordinances submitted, that by the city of Newton was approved by the Division on Jan. 24, 1922. The ordinance submitted by the city of Springfield was disapproved July 6, 1922. The ordinance of the city of Westfield was returned, not approved, on Aug. 1, 1922. The remainder were held for further consideration.

During the year, hearings were held in October, 1921, and in February, March, June and August of 1922, on objections from the following cities and towns to certain locations, under section 3D of the rules and regulations aforesaid: —

Agawam.	Hanover.	Rockport.
Amesbury.	Haverhill.	Rutland.
Andover.	Hingham.	Salem.
Arlington.	Holbrook.	Saugus.
Attleboro.	Holyoke.	Somerset.
Barnstable.	Hull.	Somerville.
Barre.	Kingston.	South Hadley.
Bedford.	Lexington.	Southborough.
Beverly.	Lincoln.	Stoneham.
Brockton.	Lynnfield.	Swampscott.
Brookfield.	Marblehead.	Taunton.
Chelmsford.	Marlborough.	Tewksbury.
Chelsea.	Medfield.	Tyngsborough.
Clinton.	Medford.	Wakefield.
Concord.	Merrimac.	Walpole.
Danvers.	Middleborough.	Waltham.
Dedham.	Milford.	Wareham.
Dudley.	Milton.	Watertown.
East Bridgewater.	Natick.	West Newbury.
East Longmeadow.	Needham.	West Springfield.
Falmouth.	Newton.	Westfield.
Fitchburg.	Northampton.	Weston.
Foxborough.	Palmer.	Westport.
Framingham.	Pembroke.	Weymouth.
Franklin.	Plainville.	Whitman.
Gloucester.	Plymouth.	Winchester.
Grafton.	Quincy.	Woburn.
Great Barrington.	Raynham.	Wrentham.
Greenfield.	Reading.	Yarmouth.
Groton.	Rockland.	

*Scenic Highways.* — In addition to the three scenic highways approved in 1921, known as the Mohawk Trail route, North Shore route, and Northampton-Pittsfield route, the following route was designated and approved: —

Pittsfield-New Lebanon Route, beginning at the intersection of the State highway in Pittsfield, locally called Lebanon Road, and the road to Richmond, and extending in a westerly direction through Pittsfield and Hancock to the New York State line, between Hancock in Massachusetts and New Lebanon in New York.

The receipts for the year ending Nov. 30, 1922, were \$13,896.93.

The expenditures for the year ending Nov. 30, 1922, were \$11,272.62.

## RECOMMENDATIONS FOR LEGISLATION.

### DIVISION OF HIGHWAYS.

#### *Bridges.*

In the opinion of the Department of Public Works it is necessary and desirable, in the interest of public safety, that legislation be enacted which shall provide that no bridge on a public highway having a span in excess of 10 feet shall be constructed or reconstructed by any city or town except in accordance with plans and specifications therefor approved by the Division of Highways of the Department of Public Works; that said Division shall determine the maximum load that any such bridge may safely carry; and that said Division or the local authorities may maintain certain notices at each end of said bridge stating the maximum weight of vehicle with load which the bridge will carry.

#### *Amendment of the Eight-Hour Law.*

In view of the fact that public highway work is largely of a seasonal nature, and that the interests of the State and the general public would be best served by amending the eight-hour law, so called, it is recommended that section 36 of chapter 149 of the General Laws be amended by adding at the end of the second section the words, — “or to persons employed by the state department of public works or by contractors or subcontractors for said department in the construction or maintenance of highways, when, in the opinion of the commissioner of labor and industries, public necessity so requires.”

#### *Contracts for the Construction of New State Highways or the Reconstruction of Existing State Highways.*

It is recommended that legislation be passed amending section 27 of chapter 29 of the General Laws to enable the



Division of Highways, in anticipation of an appropriation, to make contracts for the construction of new State highways or the reconstruction of existing State highways.

### *Sale of Maps.*

The Department of Public Works from time to time prepares maps for use in connection with the exercise of its powers and duties. Inasmuch as some of these maps are in considerable demand by the public, it is recommended that legislation be enacted authorizing the Department (Division of Highways and Division of Waterways and Public Lands) to sell the same at such prices and on such conditions as it may prescribe.

### REGISTRY OF MOTOR VEHICLES.

It is recommended that chapter 90 of the General Laws relating to motor vehicles be amended. The various amendments may be summarized as applying to sections 1, 5, 8, 10, 12, 13, 14, 17, 22, 29, 30, 32 and 33 of said chapter, and cover the following matters: increase in fees to be paid by dealers and repairers; duplicates of licenses and plates; certified copies of applications and notices, and also to the matter of discontinuing the issuance of special licenses to chauffeurs.

### DIVISION OF WATERWAYS AND PUBLIC LANDS.

#### *Sale of Maps.*

See recommendations relating to the Division of Highways.

#### *Town Boundary Lines.*

A number of inquiries have been made during the last few years as to the procedure necessary to make changes in the marking of town boundary lines when existing monuments interfered with proper and reasonable use of the premises where said marks or bounds were located.

By chapter 42 of the General Laws provision has been made in the case of lines established by the Legislature on the recommendation of the Division of Waterways and Public Lands for the preservation and remarking of such lines, but no provision has been made for other town lines.

Recommendation is therefore made that section 10 of said chapter 42 be amended.

## APPENDIX.

## CONTRACT PRICES DEC. 1, 1921, TO NOV. 30, 1922.

TOWN OR CITY.	Contractor.	EXCAVATION.			Plain Concrete Masonry (Cubic Yard).	BITUMINOUS SURFACING.		Concrete Surfacing (Cubic Yard).	Broken Stone (Ton).
		Earth (Cubic Yard).	Borrow (Cubic Yard).	Ledge (Cubic Yard).		Asphalt (Gallon).	Tar (Gallon).		
Acton . . . .	Canedy Construction Company.	\$1 10	-	\$5 00	\$30 00	\$0 15	-	-	\$3 50
Amesbury . . . .	J. E. Watkins . . . .	1 05	\$1 05	3 50	20 00	13½	-	-	3 49
Andover . . . .	M. McDonough Com- pany.	90	-	5 00	-	-	-	\$10 25	-
Ashby . . . . .	Paul J. Keating . . . .	1 25	1 25	3 50	20 00	-	-	-	-
Ashburnham . . . .	Lane Construction Cor- poration.	1 25	1 25	4 00	20 00	14	-	-	4 00
Ashland . . . . .	John L. Schube . . . .	1 25	1 50	3 00	-	15	-	-	3 80
Ayer-Shirley . . . .	Canedy Construction Company.	1 10	1 25	5 00	30 00	15	-	-	3 50
Becket (bridges) . . . .	Frizzell Engineering Com- pany.	1 20	1 10	-	25 00	20	-	-	-
Bridgewater, Middle- borough.	Bertram L. Thomas . . . .	-	-	5 00	17 50	-	-	-	-
Burlington . . . . .	A. J. Mitchell, Inc. . . .	1 20	1 00	5 00	20 00	11	-	-	-
Cummington-Goshen . . . .	T. J. Quinn . . . . .	1 40	1 48	3 00	25 00	16	-	-	4 35
Danvers . . . . .	Canton Engineering Com- pany.	1 40	1 25	4 00	18 00	14	-	-	2 30
Dover-Needham . . . .	W. H. Connor & Son . . .	1 25	1 50	2 00	-	17	-	-	3 50
Easton-Raynham . . . .	C. Bianchi & Co. . . . .	1 15	1 10	5 00	20 00	16	-	11 00	3 90
Enfield . . . . .	- . . . .	-	-	-	-	-	-	-	-
Essex . . . . .	L. Luchini & Son . . . .	1 15	-	3 50	22 00	15	-	-	3 60
Falmouth . . . . .	Atwood-Thomas Con- struction Co.	1 00	80	1 50	17 50	20	-	-	4 25
Foxborough . . . . .	A. J. Mitchell . . . . .	1 10	-	3 00	-	15	-	-	3 25
Framingham . . . . .	Carlo Bianchi & Co. . . .	1 50	-	7 00	-	16	-	-	3 00
Grafton . . . . .	Middlesex Construction Company.	1 35	1 40	5 00	25 00	20	-	-	4 00
Great Barrington . . . .	Lane Construction Cor- poration.	1 15	1 25	3 00	30 00	14	-	-	3 50
Harwich . . . . .	- . . . .	-	-	-	-	-	-	-	-
Hingham . . . . .	Charles M. Callahan . . . .	90	1 16	3 00	20 00	16	-	11 00	2 50
Holbrook . . . . .	E. C. Sargent . . . . .	1 10	-	4 00	18 00	15	-	-	3 00
Holden . . . . .	McCabe & Giovaninni . . .	1 20	1 30	5 00	25 00	15	-	-	4 50
Holyoke . . . . .	D. O'Connell's Sons Com- pany.	1 25	1 15	4 00	20 00	15	-	-	3 25
Lee . . . . .	C. E. Horne . . . . .	1 00	-	3 00	20 00	-	-	11 00	4 00

## APPENDIX.

CONTRACT PRICES DEC. 1, 1921, TO NOV. 30, 1922.

PIPE CULVERTS (LINEAL FOOT).							Fencing (Lineal Foot).	Stone Filling (Cubic Yard).	Bounds (Each).	Catch Basins (Each).	Reinforced Concrete Masonry (Cubic Yard).	Gravel Borrow (Cubic Yard).
CLAY.			CORRUGATED IRON.									
Ten-inch.	Twelve-inch.	Fifteen-inch.	Twelve-inch.	Fourteen-inch.	Sixteen-inch.	Eighteen-inch.						
-	\$1 75	-	-	-	-	-	\$1 00	-	-	\$100 00	-	\$1 50
-	1 49	-	-	-	-	-	65	-	-	72 50	-	1 10
-	1 50	\$1 75	-	-	-	-	-	-	-	75 00	-	1 25
-	2 25	-	-	-	-	-	70	-	-	-	-	1 80
-	1 50	-	-	-	-	-	75	\$2 25	-	100 00	-	-
-	-	-	-	-	-	-	75	-	-	-	-	1 65
-	-	-	-	-	-	-	80	-	-	100 00	-	1 50
-	-	-	-	-	\$5 00	-	1 00	-	-	-	\$25 00	1 20
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	85 00	-	1 40
-	-	-	\$4 00	-	-	\$4 60	65	2 90	\$5 00	100 00	39 00	1 85
-	-	-	-	-	-	-	60	-	-	75 00	-	1 25
-	-	-	-	-	-	-	70	-	-	-	26 00	1 75
-	1 25	1 50	-	-	-	-	75	-	6 00	75 00	30 00	1 00
-	-	-	-	-	-	-	-	-	-	-	-	-
-	1 80	2 10	-	-	-	-	75	-	-	75 00	-	1 20
\$1 25	-	-	-	-	-	-	-	-	-	75 00	22 50	1 33⅓
-	-	-	3 00	-	4 00	-	75	-	-	75 00	-	1 10
1 50	-	-	-	-	-	-	-	-	-	90 00	-	1 90
-	-	-	2 75	-	-	-	75	3 00	-	-	-	1 30
-	1 75	2 00	-	-	-	-	75	3 00	4 00	100 00	35 00	1 25
-	-	-	-	-	-	-	-	-	-	-	-	-
-	1 50	1 50	-	-	-	-	70	-	4 00	60 00	-	1 35
-	1 50	-	-	-	-	-	-	-	-	75 00	-	1 20
-	-	2 00	-	-	-	3 00	-	2 50	-	-	30 00	1 50
-	1 75	-	2 15	-	-	-	70	2 75	-	-	25 00	1 55
1 25	1 50	2 00	3 00	-	-	5 00	65	-	3 00	70 00	30 00	1 17



CONTRACT PRICES DEC. 1, 1921, TO NOV. 30, 1922 — *Concluded.*

TOWN OR CITY.	Contractor.	EXCAVATION.			Plain Concrete Masonry (Cubic Yard).	BITUMINOUS SURFACING.		Concrete Surfacing (Cubic Yard).	Broken Stone (Ton).
		Earth (Cubic Yard).	Borrow (Cubic Yard).	Ledge (Cubic Yard).		Asphalt (Gallon).	Tar (Gallon).		
Leicester . . .	Bruno & Pettitti . . .	\$1 15	-	\$3 00	\$25 00	\$0 15	-	\$11 00	\$3 50
Lexington . . .	J. W. O'Connell . . .	1 25	-	3 00	15 00	14	-	-	2 50
Longmeadow . . .	Lane Construction Cor- poration.	1 00	-	-	-	-	-	10 90	3 00
Lowell . . .	Powers Brothers . . .	1 00	\$0 80	4 00	20 00	14½	-	-	3 50
Maynard . . .	W. H. Connor & Son . . .	-	1 50	3 00	10 00	-	-	-	-
Mendon . . .	L. C. Carchia Company	1 10	1 10	3 00	15 00	15	-	-	4 00
Merrimac, Haverhill . . .	Rowe Contracting Com- pany.	1 25	1 20	4 00	20 00	-	-	12 00	-
Middleton . . .	J. E. Watkins . . .	1 15	-	4 50	20 00	15	-	-	3 10
Middleton (bridge) . . .	Engineering Service and Construction Company.	1 50	1 50	3 00	-	20	-	-	4 50
Milford . . .	L. Luchini & Son . . .	1 00	-	3 00	18 00	16	-	-	4 15
New Braintree . . .	J. Laurenzi & Russo Com- pany.	1 30	1 50	2 50	25 00	17	-	-	4 25
Northborough-West- borough.	Middlesex Construction Company.	1 30	1 60	3 50	20 00	15	-	-	3 85
Norwell . . .	Bradford Weston . . .	1 00	1 00	4 50	16 50	15½	-	-	2 60
Otis, Monterey . . .	Middlesex Construction Company.	1 60	1 50	5 00	23 00	-	-	-	-
Otis, Sandisfield . . .	Lane Construction Cor- poration.	1 10	1 25	3 25	25 00	17	-	-	3 25
Plymouth (bridge) . . .	D. H. Jacobs & Son, Inc.	80	80	3 00	-	16	-	-	4 00
Shelburne . . .	T. J. Quinn . . .	75	1 10	3 00	18 00	14	-	-	3 95
Southwick . . .	Cenedella & Co. . .	1 00	1 00	3 00	20 00	14	-	-	2 70
Sterling, West Boylston . . .	State Contracting Com- pany.	1 35	1 35	3 50	18 00	15	-	-	3 75
Sutton . . .	Powers Brothers . . .	1 10	1 00	3 00	20 00	-	-	11 75	-
Topsfield, Ipswich, Rowley, Newbury.	Coleman Brothers . . .	1 25	1 00	4 00	17 00	16	-	13 00	2 50
West Springfield . . .	Hassam Paving Company	1 35	-	-	-	15	-	10 26	3 00
Westwood . . .	W. A. Jones . . .	1 10	-	5 00	15 00	15	-	-	3 50
Wilbraham, Palmer, Monson.	D'Onfro Brothers, Inc. . .	80	-	3 00	20 00	-	-	10 40	-
Williamstown, New Ash- ford.	Hoyt Construction Com- pany.	1 00	1 00	2 50	21 00	16½	-	-	3 00
Windsor-Cummington . . .	Hanscom Construction Company.	1 30	1 00	5 00	20 00	17	-	-	3 50
Windsor-Dalton . . .	Lane Construction Cor- poration.	1 15	1 25	3 00	25 00	15	-	-	3 75
Woburn . . .	American Construction Company.	-	-	4 00	-	-	-	-	-
Wrentham . . .	L. Luchini & Son . . .	1 50	-	5 00	-	16	-	-	4 00
Yarmouth . . .	Atwood-Thomas Con- struction Co.	90	1 15	2 00	20 00	15½	-	-	3 65

CONTRACT PRICES DEC. 1, 1921, TO NOV. 30, 1922 — *Concluded.*

PIPE CULVERTS (LINEAL FOOT).							Fencing (Lineal Foot).	Stone Filling (Cubic Yard).	Bounds (Each).	Catch Basins (Each).	Reinforced Concrete Masonry (Cubic Yard).	Gravel Borrow (Cubic Yard).
CLAY.			CORRUGATED IRON.									
Ten-inch.	Twelve-inch.	Fifteen-inch.	Twelve-inch.	Fourteen-inch.	Sixteen-inch.	Eighteen-inch.						
\$1 50	\$2 00	-	\$3 00	-	-	-	\$0 75	\$2 50	\$4 00	\$70 00	\$30 00	\$2 00
-	1 50	-	-	-	-	-	60	-	-	75 00	18 00	1 15
-	1 25	-	-	-	-	-	-	-	-	85 00	-	50
1 50	1 50	-	3 00	-	-	-	70	-	5 00	75 00	30 00	90
-	-	-	-	-	-	-	70	-	-	-	25 00	2 00
-	2 00	\$3 00	3 00	-	\$4 25	-	1 00	2 50	6 00	60 00	25 00	1 10
-	1 50	1 65	2 60	\$3 25	3 50	\$4 00	65	-	5 00	65 00	30 00	1 15
-	1 30	-	-	-	-	-	75	-	-	75 00	-	1 14
-	-	-	-	-	-	-	1 00	-	-	-	33 00	1 50
-	-	-	1 75	-	-	-	75	2 40	-	-	25 00	1 25
-	-	-	2 50	-	-	3 00	-	2 25	-	-	-	2 50
-	-	-	3 50	-	-	4 50	-	2 90	-	-	-	1 50
-	-	-	1 48	-	-	2 05	65	-	-	64 00	-	-
-	1 75	-	3 50	-	-	5 00	-	3 20	-	-	35 00	2 00
-	2 00	-	3 00	-	-	-	70	2 25	5 00	-	35 00	1 25
-	-	-	-	-	-	-	60	-	5 00	-	24 00	1 50
-	-	-	-	-	-	-	75	2 85	4 00	85 00	26 50	1 50
1 25	2 00	-	2 00	-	-	3 50	1 50	2 35	5 00	90 00	25 00	1 60
-	-	-	-	-	-	-	75	2 20	5 00	70 00	-	1 35
-	-	-	3 00	-	-	-	-	-	-	-	30 00	1 25
-	1 50	2 00	-	-	-	-	70	-	5 00	90 00	20 00	1 20
2 25	-	-	-	-	-	-	1 00	-	-	75 00	-	1 50
-	-	-	-	-	-	-	70	-	-	-	-	1 00
-	3 00	-	-	-	-	-	-	1 75	5 00	75 00	20 00	1 25
-	1 75	-	3 00	-	-	-	60	2 35	4 00	-	25 00	1 50
-	2 00	-	3 35	-	-	4 50	60	2 60	5 00	-	35 00	1 25
-	1 50	2 00	3 00	-	-	5 00	75	3 00	4 00	100 00	30 00	1 25
-	-	-	-	-	-	-	-	-	-	-	-	1 75
-	2 50	-	-	-	-	-	-	-	-	80 00	-	1 50
-	1 50	-	1 50	-	-	-	60	-	-	60 00	-	-

FEDERAL AID.<sup>1</sup>

AN ACT MAKING APPROPRIATIONS FOR THE POST OFFICE DEPARTMENT  
FOR THE FISCAL YEAR ENDING JUNE 30, 1923, AND FOR OTHER  
PURPOSES.

. . . . .

SEC. 4. That for the purpose of carrying out the provisions of the Act entitled "An Act to provide that the United States shall aid the States in the construction of rural post roads, and for other purposes," approved June 11, 1916, and all Acts amendatory thereof and supplementary thereto, there is hereby authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, the following additional sums, all such sums to be expended in accordance with the provisions of such Act:

The sum of \$50,000,000 for the fiscal year ending June 30, 1923.

The sum of \$65,000,000 for the fiscal year ending June 30, 1924.

The sum of \$75,000,000 for the fiscal year ending June 30, 1925.

The Secretary of Agriculture is hereby authorized, immediately upon the passage of this Act, to apportion the \$50,000,000 herein authorized to be appropriated for the fiscal year ending June 30, 1923, among the several States as provided in section 21 of the Federal Highway Act approved November 9, 1921: Provided, That the Secretary of Agriculture shall act upon projects submitted to him under his apportionment of this authorization and his approval of any such project shall be deemed a contractual obligation of the Federal Government for the payment of its proportional contribution thereto.

. . . . .

PAR. 3. For the purposes of this section and of the Acts heretofore making appropriations to aid the States in the construction of rural post roads the term "bridges" includes railroad grade, whether by means of overhead or underpass crossings.

PAR. 4. The provision of section 5 of the Act entitled "An Act making appropriations for the service of the Post Office Department for the fiscal year ending June 30, 1920, and for other purposes," approved February 28, 1919, fixing the limitation of \$20,000 per mile which the Secretary of Agriculture may make, is hereby amended to read as follows:

"That the payments which the Secretary of Agriculture may make from sums appropriated under this Act or any Act amendatory thereof or supplementary thereto for the fiscal year ending June 30, 1923, shall not exceed \$16,250 per mile exclusive of the cost of bridges of more than twenty feet of clear span; and that the payments which the Secretary of Agriculture may make from any sums appropriated under the provisions

<sup>1</sup> See page 37 of this report.



of this Act or any Act amendatory thereof or supplementary thereto, after the fiscal year ending June 30, 1923, shall not exceed \$15,000 per mile exclusive of the cost of bridges of more than twenty feet of clear span: Provided, That the limitation of payments herein provided shall apply to the public-land States, except that the same is hereby increased in proportion to the increased percentage of Federal aid authorized by section 11 of the Act entitled 'An Act to amend the Act entitled "An Act to provide that the United States shall aid the States in the construction of rural post roads, and for other purposes,"' approved November 9, 1921."

PAR. 5. Section 24 of the Act entitled "An Act to amend the Act entitled 'An Act to provide that the United States shall aid the States in the construction of rural post roads, and for other purposes,' " approved November 9, 1921, is amended to read as follows: "That in any State where the existing constitution or laws will not permit the State to provide revenues for the construction, reconstruction, or maintenance of highways, the Secretary of Agriculture shall continue to approve projects for said State until five years after November 9, 1921, if he shall find that said State has complied with the provisions of this Act in so far as its existing constitution and laws will permit."

PAR. 6. If any officer, agent, or employee of the United States, or any officer, agent, or employee of any State or Territory, or any person, association, firm, or corporation or any officer or agent of any person, association, firm, or corporation shall knowingly make any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the costs thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction of any project submitted for approval to the Secretary of Agriculture under the provisions of the Federal Highway Act, or shall knowingly make any false statement, false representation, or false report or claim for work or materials for the construction of any project approved by the Secretary of Agriculture under said Federal Highway Act and all amendments thereto, or shall knowingly make any false statement or false representation in any report required to be made under said Federal Highway Act or Acts supplementary thereto with the intent to defraud the United States shall, upon conviction thereof, be punished by imprisonment not to exceed five years or by a fine not to exceed \$10,000, or by both fine and imprisonment within said limits.

PAR. 7. If any provision of this section, or the application thereof to any person or circumstances, shall be held invalid, the validity of the remainder of the section and the application of such provision to other persons or circumstances shall not be affected thereby.

PAR. 8. All Acts or parts of Acts in any way inconsistent with the provisions of this section are hereby repealed.

. . . . .

Approved, June 19, 1922.

## REGISTRY OF MOTOR VEHICLES.

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### MOTOR VEHICLE DEATHS, INJURIES, COLLISIONS.

During the year 1922 the several campaigns which were started in 1920 to reduce automobile accidents and to make the highways of the Commonwealth safer for all who use them have been continued with unabated vigor. The principal agencies used to this end have been the police departments throughout the Commonwealth, the schools, the Massachusetts Safety Council, and the press. All these agencies have given us very gratifying co-operation, and have brought about a remarkable reduction in the number of persons killed, considering the fact that during the past year we had an increase of 88,753 in the registrations of motor vehicles, or a total of 461,543 registrations for the year. Two other elements which should not be overlooked as contributing causes in the reduction of accidents are: first, the regulation made in December, 1920, requiring the examination of all applicants for licenses; second, a more strict enforcement of the motor vehicle law, which resulted, during the past year, in the revocation of 8,369 licenses as compared with 4,899 taken away in the year 1921.

During the past year there has been an increase, comparatively slight, in the number of persons injured, or 15,277 as against 11,486 for 1921. This increase, however, is not surprising, in view of the greatly increased number of motor vehicles on the road. This increase in the number of injured may also be due, in part, to the fact that the public, now amply provided with a convenient accident report blank, are reporting minor accidents more than formerly. It is much to be regretted that our figures show a continued, steady increase in the number of children killed and injured. Active measures, however, will be taken during the coming year toward reducing these casualties among children.



The following comparative tables show the reduction in serious accidents that has been made during the past year, an analysis of licenses revoked and suspended, and the statistics relating to aircraft. Special attention is called to the ratio of deaths to registrations for the year 1922, indicated in one of the tables, which ratio (.00113) is smaller than that of any year in the history of this Department since 1908.

## NUMBER OF PERSONS KILLED AND INJURED.

	KILLED.		INJURED.	
	1921.	1922.	1921.	1922.
Pedestrians, by autos . . . . .	339	302	6,484	8,986
Pedestrians, by motor cycles . . . . .	2	1	40	28
Pedestrians near street cars . . . . .	2	8	28	11
Occupants of autos . . . . .	159	157	3,744	5,202
Occupants of motor cycles . . . . .	28	22	424	304
Bicycle riders . . . . .	14	19	594	425
Occupants of teams, carriages, etc. . . . .	—	2	173	183
Coasters . . . . .	—	11	—	138
Totals . . . . .	544	522	11,487	15,277

## NUMBER OF CHILDREN KILLED AND INJURED.

	KILLED.		INJURED.	
	1921.	1922.	1921.	1922.
Boys . . . . .	139	149	2,446	3,451
Girls . . . . .	57	60	987	1,163
Totals . . . . .	196	209	3,433	4,614

## NUMBER OF COLLISIONS.

	1921.	1922.
Autos v. pedestrians . . . . .	6,896	8,547
Autos v. autos . . . . .	12,508	12,630
Autos v. teams, carriages, etc. . . . .	743	463
Autos v. bicycles . . . . .	793	491
Autos v. trolley cars . . . . .	783	466
Autos v. poles, trees, etc. . . . .	1,631	1,356
Autos v. trains . . . . .	64	56
Autos v. motor cycles . . . . .	725	404
Autos v. sled . . . . .	58	115
Motor cycles v. pedestrians . . . . .	—	30
Totals . . . . .	24,201	24,558
In the daytime . . . . .	18,616	18,778
After dark . . . . .	5,585	5,780
Totals . . . . .	24,201	24,558



## SUSPENSIONS AND REVOCATIONS FOR 1921 AND 1922.

	1921.	1922.
Licenses suspended . . . . .	1,940	3,184
Licenses revoked . . . . .	1,119	1,385
Rights suspended . . . . .	629	1,048
Registration certificates suspended . . . . .	75	23
Registration certificates revoked . . . . .	565	1,661
Registration certificates and licenses suspended . . . . .	36	40
Registration certificates and licenses revoked . . . . .	483	916
Registration certificates revoked and rights suspended . . . . .	47	96
Rights to have cars operated in Massachusetts suspended . . . . .	5	16
Totals . . . . .	4,899	8,369
Resulting from investigations . . . . .	2,341	4,555
Resulting from court convictions . . . . .	2,452	3,482
Resulting from police complaints . . . . .	106	262
Resulting from judge's complaints . . . . .	—	39
Resulting from constabulary complaints . . . . .	—	31
Totals . . . . .	4,899	8,369
Reckless and endangering . . . . .	438	512
Liquor . . . . .	1,412	2,108
Going away . . . . .	124	207
Without authority . . . . .	172	307
Improper person . . . . .	541	822
Improper person, liquor . . . . .	96	352
Improper operation . . . . .	706	1,615
Two speeds . . . . .	272	304
Three speeds . . . . .	23	20
Several violations . . . . .	14	—
Operating for hire on operator's licenses . . . . .	10	—
Did not return licenses for restrictions . . . . .	7	—
Improper equipment, miscellaneous . . . . .	367	703
Improper equipment, lights . . . . .	—	320
Improper equipment, brakes . . . . .	—	305
Deaths . . . . .	516	515
Other offences . . . . .	201	279
Totals . . . . .	4,899	8,369
Hearings . . . . .	999	1,840

SUSPENSIONS AND REVOCATIONS FOR 1921 AND 1922 — *Concluded.*

	1921.	1922.
Court recommendations adopted:		
Liquor . . . . .	215	304
Reckless and endangering . . . . .	61	65
Going away . . . . .	25	24
Without authority . . . . .	5	4
Racing . . . . .	—	1
Totals . . . . .	306	398
Persons whose licenses were suspended or revoked and who had to pass an examination in order to have them returned.	733	706

COMPARATIVE STATEMENT SHOWING RATIO OF ACCIDENTS TO YEARLY REGISTRATIONS, SUSPENSIONS, ETC.

YEAR.	Auto- mobiles reg- istered.	Motor Cycles reg- istered.	Total Reg- istrations.	Number of Persons killed.	Ratio of Deaths to Reg- istrations.	Number of Persons injured.	Ratio of Injuries to Reg- istrations.	Licenses suspended.	Licenses revoked.	Rights suspended.
1908	.	.	.	.	.	486	.02431	51	44	-
1909	.	.	.	54	.00205	989	.03751	132	68	-
1910	.	.	.	77	.00222	963	.02774	198	90	-
1911	.	.	.	110	.00258	1,248	.02932	254	95	-
1912	.	.	.	142	.00257	1,962	.03557	325	190	-
1913	.	.	.	188	.00269	2,923	.04188	365	198	-
1914	.	.	.	229	.00268	4,010	.04695	521	231	34
1915	.	.	.	294	.00262	6,197	.05525	615	303	181
1916	.	.	.	315	.00214	9,131	.06190	641	514	232
1917	.	.	.	438	.00236	7,282	.03929	794	717	300
1918	.	.	.	499	.00242	8,598	.04166	957	811	398
1919	.	.	.	582	.00223	16,287	.06243	1,013	856	264
1920	.	.	.	481	.00150	21,182	.06624	1,270	1,172	346
1921	.	.	.	544	.00145	11,487	.03081	1,940	1,119	629
1922	.	.	.	522	.00113	15,277	.03310	3,184	1,385	1,048



## CONFERENCE OF MOTOR VEHICLE ADMINISTRATORS.

During the year 1922 four meetings of the Conference of Motor Vehicle Administrators were held. The first meeting, January 20, held at Hartford, Conn., was attended by the registrar. The second, on April 21, at Harrisburg, Pa., was attended by the chief clerk. Massachusetts was not represented at the third meeting, on July 21, at Baltimore, Md. The fourth meeting was held on September 22 in Boston.

This conference now includes the following States: Maine, Massachusetts, New Hampshire, Vermont, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey and Maryland.

The purpose of the conference is to promote uniformity in motor vehicle legislation, and over twenty-two resolutions were considered by the conference, among the principal ones being: the right of way law; the law in regard to weight, height and speed of commercial vehicles; and the law in regard to operating under the influence of liquor; upon all of which the conference unanimously agreed. The conference also agreed to carry on safety campaigns in their respective States, and a committee has been designated to report on "uniform hand signals."

Probably the most important resolution accepted by the conference is the adoption by the States represented of what is known as "The 1922 Standard Specifications for Approval of Headlighting Devices." These specifications are based on the original Massachusetts specifications, with a few minor improvements, and have been adopted by the Illuminating Engineering Society and the Society of Automotive Engineers.

Approval of headlighting devices is given after ratification by the conference, and will result in uniform approved lists of approved headlighting devices.

## INVESTIGATIONS AND PROSECUTIONS BY INSPECTORS.

The following table presents a classification and summary of the work of the inspectors other than examination work, together with comparative figures for the preceding year: —

	1921.	1922.
Total reports received from inspectors . . . . .	3,360	5,091
Itemized as follows:		
Accidents, fatal . . . . .	554	510
Accidents, non-fatal . . . . .	385	701
Accidents, brief reports . . . . .	243	498
General reputation . . . . .	521	870
Miscellaneous . . . . .	1,657	2,512
Totals . . . . .	3,360	5,091
Complaints filed . . . . .	—	13,281
Garages inspected . . . . .	—	1,339
Headlight violations reported . . . . .	—	12,096
Prosecutions conducted . . . . .	221	405
Fines imposed . . . . .	\$5,845	\$9,462

The figures above include four airplane accidents investigated, — one fatal and three non-fatal.

#### ANALYSIS OF COURT ABSTRACTS RECEIVED.

	1921.	1922.
Number of courts forwarding abstracts . . . . .	94	95
Number of abstracts received . . . . .	30,714	35,968
<i>Disposition of Cases.</i>		
Guilty . . . . .	21,687	25,646
Not guilty . . . . .	991	1,084
Appealed . . . . .	1,391	1,588
Placed on file . . . . .	7,140	6,500
Nol-prossed . . . . .	737	476
Probation . . . . .	365	379
Imprisonment . . . . .	503	525
Defaulted . . . . .	26	30
<i>Offences.</i>		
Overspeeding . . . . .	7,247	4,392
Reckless . . . . .	268	291
Intoxicated . . . . .	1,821	2,157
Using auto without authority . . . . .	286	788
Endangering lives . . . . .	610	765
Not stopping after causing injury . . . . .	266	408
Without license . . . . .	2,746	3,237
Without registration certificate . . . . .	1,551	1,894
Unregistered vehicle . . . . .	325	408

ANALYSIS OF COURT ABSTRACTS RECEIVED — *Concluded.*

	1921.	1922.
<i>Offences — Concluded.</i>		
Improper display or no register number . . . . .	409	457
Refusing to stop on signal . . . . .	531	557
Unlighted lamps . . . . .	1,681	1,424
No signal . . . . .	2,738	3,563
Dazzling lights . . . . .	230	331
Operating within 8 feet of street car . . . . .	472	454
Violation of metropolitan park rules . . . . .	664	345
Operating, license suspended or revoked . . . . .	102	132
Larceny . . . . .	196	179
Manslaughter . . . . .	134	39
Miscellaneous . . . . .	2,576	2,189

## EXAMINATIONS FOR LICENSES.

Examinations of applicants for licenses to operate motor vehicles are now held at 58 examination points in the Commonwealth. At some of these points examinations are conducted daily, at other places weekly or fortnightly, depending on the season of the year, and as warranted by the number of applicants. During the fiscal year 1922 the inspectors conducted 122,220 examinations of private operators and chauffeurs. The table below gives the several classes of persons examined, and shows the number of those who were found unfit.

With regard to the personnel of this section, there have been some additions to the force, so that it now consists of the chief and 65 inspectors.

	1919.	1920.	1921.	1922.
Total examinations . . . . .	19,107	39,845	94,023	122,220
Chauffeurs examined . . . . .	18,882	37,444	46,506	54,541
Chauffeurs unfit . . . . .	3,499	4,510	5,485	7,575
Operators examined . . . . .	225	2,401	46,136	64,447
Operators unfit . . . . .	66	403	9,716	12,968
Removal of restriction, examined . . . . .	—	—	—	3,130
Removal of restriction, unfit . . . . .	—	—	—	255
"Competency," passed . . . . .	—	83	137	102
"Competency," unfit . . . . .	—	45	23	17



## HEADLIGHTING.

During the year very satisfactory improvement has been made in the headlighting of motor vehicles, both in the advancement of the art and in the results obtained by enforcement. Inasmuch as this is the first full year since the use of approved headlighting devices has been required, the results obtained are of considerable importance as showing the effectiveness of this law. In spite of the fact that there was an increase of 88,753 registrations over the preceding year, the fatal accidents occurring at night decreased from 183 in 1921 to 171 in 1922. In other words, there was one fatal accident at night for every 2,037 motor vehicles registered in 1921, while during the year 1922 there was only one fatal accident at night for every 2,699 motor vehicles registered.

This improvement in conditions may be attributed to three causes: —

1. An increase in the amount of light in the case of many vehicles which have heretofore had an insufficient amount.

2. A decrease in the amount of light in other cases where high candlepower bulbs were used.

3. A better control of the light within that area below the horizontal, where it is necessary for safe driving without causing glare.

In former years our yearly analysis has shown that approximately 20 per cent of the night accidents were due to lighting conditions. This 20 per cent is made up approximately as follows: 15 per cent insufficient light and 5 per cent glare.

The improvement in conditions noted under 1 and 2 has been very marked, due to a vigorous enforcement to secure proper equipment, which includes the headlighting device, the bulb and the reflector. The improvement in conditions under 3 has also been quite marked, but has not progressed so far, due to the fact that it requires an extensive educational program. This educational work has been handled by two different methods: (1) by the issuance of simple printed instructions to the car owner or operator himself; (2) by the official approval of such persons as made application and were found competent after instruction to adjust headlamps of all kinds.

The list of approved headlamp adjusters was increased during the year to about 650, in all parts of the State. This list has been kept available in printed form, and has been issued to persons requesting it, and also to persons who have been reported as violating the headlight law.

During the year 12,096 violations of the headlight law were reported by inspectors in the Department, and approximately 1,000 complaints were received from police officers and others. In most of these 13,000 cases, the owners of the vehicles were required either to remedy the defect themselves and report to an examiner at one of the examination points for inspection, or to report to an approved adjuster who would correct the defect and mail a certificate to this office.

Some improvement has been made in the laboratory tests of devices which are submitted for approval. The specifications for such tests, which were adopted by the registrar when the law went into effect, have been followed in principle by the Illuminating Engineering Society and Society of Automotive Engineers, which, at a joint meeting in New York in February, made a few slight improvements in these specifications, and adopted them. Since then the Conference of Motor Vehicle Administrators have adopted the same specifications for test, and, in the interests of uniformity, the ten motor vehicle administrators making up this conference have agreed not to approve of any headlighting device in their respective States until the conference has passed on its acceptability.

During the year 19 applications were made for approval of headlighting devices. Of these, 16 were approved and 3 were refused approval because they did not comply with the test requirements.

#### REAR LAMPS.

On July 27, 1922, the law went into effect requiring that no rear lamp shall be used on any motor vehicle unless approved by the registrar. Exhaustive tests were made and specifications formulated for approval of rear lamps. Temporary approval was given by the registrar to cover all lamps which complied with the old law requiring the illumination of number plates so as to be legible at 60 feet, and such temporary approval was good until Jan. 1, 1923. In the meantime applications for approval of rear lamps were received, and the first



list of approved lamps was announced on November 15. Up to the 1st of December 42 rear lamps were approved, many of them submitted by motor car manufacturers.

At a joint meeting of the Illuminating Engineering Society and Society of Automotive Engineers held on Dec. 29, 1922, the specifications under which rear lamps are approved in this State were adopted in principle, although a slightly different form and wording was used. These specifications were not adopted solely as a result of the work done in Massachusetts, but also as a result of exhaustive tests by the committee members working independently. Approvals given under either set of specifications would be practically identical.

The principal changes in the new rear lamps have been exclusively in relation to the illumination of the number plate. The changes made are as follows: —

1. The use of glass instead of celluloid or mica in the opening through which the light passes to the number plate.

2. The requirement of a wider window opening.

3. The use of a number-plate holder in conjunction with the lamp which supports the bulb in a location farther out from the surface of the plate, so that the direct light shining back on to the plate illuminates the plate evenly and without shadow.

#### AIRCRAFT REGISTRATIONS.

(Chapter 90, General Laws, as amended by chapter 534 of the Acts of 1922, regulating the operation of aircraft.)

In the year 1922 there were six pilots' licenses issued. The fees received with these applications amounted to \$30, or \$5 for each license.

There were twelve airplanes registered. The fees received with these applications amounted to \$37. For the first eleven certificates the fee was \$2 each. For the twelfth certificate the fee was \$15 in accordance with the new aircraft law, which went into effect Sept. 11, 1922.

During the year the certificates of registration of two airplanes were revoked. One of these airplanes was re-registered under another number.

The name of one person, who held neither license nor certificate in this State, was placed on the blacklist.



## USED CAR SECTION.

(Motor Vehicle Identification.)

This section indexes the cars reported stolen and also lists the sale of used cars. In 1922 there were 8,101 cars reported stolen to this office. This total represents cars stolen from different parts of the country.

The following cars stolen outside of this State have been recovered through information furnished by this office: 3 cars stolen in Providence, R. I., 2 in Pawtucket, R. I., 1 in Lewiston, Me., 1 in Keene, N. H., 1 in Wilmington, Del., 1 in Mt. Clemens, Mich., and 23 in New York City and suburbs.

The following cars stolen in Massachusetts have been recovered outside of the State through information furnished by this office: 1 in Danielson, Conn., 1 in Putnam, Conn., 1 in Pawtucket, R. I., 2 in Manchester, N. H., 1 in Providence, R. I., 1 in Rochester, N. H., 1 in Dover, N. H., 1 in Auburn, Me., 1 in Ludlow, Vt., 1 in Springfield, Vt., 2 in Rutland, Vt., 1 in Quebec, Can., 5 in New York City, 1 in Brooklyn, N. Y., 1 in Rouses Point, N. Y., 1 in Wymantskill, N. Y., 1 in Philadelphia, Pa., 1 in Malta Bend, Ind., 1 in San Francisco, Cal., and 1 in Worland, Wyo.

A Buick touring car registered in Indiana was stolen while the owner was visiting in this State. The car was later recovered in Massachusetts. In locating the owner of the car, we found that he changed his residence to Chicago, Ill. A Buick car, registered here, was stolen from the owner in New York and later recovered in that State through this Department. A Cadillac car stolen in New Haven, Conn., was located at Manchester, Vt., through a dealer's report received at this office. A Ford runabout sold by a party in Watervliet, N. Y., to a Boston man was located at Manchester, N. H., through a dealer's report received at this office. A Ford coupe, stolen in Syracuse, N. Y., was located at Oneonta, N. Y., through this office; the car was the property of a Boston man. A White touring car owned by a man in New Glasgow, N. S., was stored at a Boston garage. The car was stolen from said garage and later recovered in West Newton through information furnished by this office.

The following figures show the work of the section for the fiscal year 1922:—

	1921.	1922.
Dealers:		
Total number making reports to this office . . . . .	1,681	1,484
Total number of first-class dealers reporting . . . . .	1,033	1,112
Total number of second and third class dealers reporting . . . . .	648	595
Reports:		
Approximate number of individual reports received daily . . . . .	175	275
Approximate number of dealers' reports received daily . . . . .	250	325
Motor vehicles stolen:		
Number of stolen motor vehicles reported to this office . . . . .	7,390	8,101
Number of cars stolen in Boston . . . . .	490	379
Number of cars recovered through this office . . . . .	339	280
Engine numbers assigned:		
Engine numbers assigned to cars . . . . .	550	459
Letters authorizing replacing of engine numbers . . . . .	50	81

The following comparative statement of cars stolen in Boston during the last five years shows the salutary effect of the so-called four-day law passed in 1919:—

#### STOLEN CARS IN BOSTON.

	1918.	1919.	1920.	1921.	1922.
Cars stolen . . . . .	866	1,063	480	490	379
Cars recovered . . . . .	607	609	297	329	159
Cars not recovered . . . . .	259	454	183	161	220

#### REGISTRATIONS, LICENSES, FEES.

Although it has seemed that motor vehicle registration must stop increasing, the year 1922 showed an increase over that of 1921 greater than the increase of 1921 over the year 1920, the percentage on pleasure or passenger vehicles being nearly 25 per cent. The following statement graphically shows increased registrations:—

## AUTOMOBILES, COMMERCIAL VEHICLES AND MOTOR CYCLES.

	1905.	1910.	1915.	1920.	1921.	1922.
Automobiles . . . . .	4,889	31,360	90,580	251,570	305,471	378,839
Commercial vehicles . . . . .	—	—	12,053	52,968	55,261	70,999
Motor cycles . . . . .	553	3,358	9,520	15,142	12,048	11,675
Totals . . . . .	5,442	34,718	112,153	319,680	372,780	461,513

The fees received for the year 1922, together with the number of vehicles registered in each classification and the number of licenses granted, etc., are shown in the following table: —

## ANALYSIS OF RECEIPTS.

## Certificates of registration:

Passenger cars . . . . .	378,839	\$3,456,397 50
Commercial cars . . . . .	70,999	949,271 00
Trailers . . . . .	519	8,754 00
Motor cycles . . . . .	11,675	53,698 00
Motor cycle dealers . . . . .	39	390 00
Manufacturers or dealers . . . . .	1,742	42,937 50
Repairers' fees . . . . .	366	3,630 00
Additional cars . . . . .	2,995	19,385 50

## Licenses to operate:

Operators . . . . .	51,208 at \$2 00	102,416 00
Operators' renewals . . . . .	222,482 at 2 00	444,964 00
Chauffeurs . . . . .	46,818 at 2 00	93,636 00
Chauffeurs' renewals . . . . .	123,665 at 2 00	247,330 00

Examinations . . . . .	121,245 at 2 00	242,490 00
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## Copies of certificates and licenses furnished

. . . . .	22,486 at 50	11,243 00
Duplicate automobile number plates . . . . .	8,549 at 75	6,411 75
Duplicate motor cycle number plates . . . . .	116 at 50	58 00
State plates . . . . .	148 at 10	14 80
Lens approval applications . . . . .	15	750 00
Rear lamp approval applications . . . . .	35	1,750 00

Totals . . . . .	965,915	\$5,685,527 05
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Other receipts (rebate checks not paid) . . . . .		415 19
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Total fees . . . . .		\$5,685,942 24
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Motor vehicle fees rebated (deducted) . . . . .		65,025 61
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Net fees . . . . .		\$5,620,916 63
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Court fines received by the Treasurer and Receiver-General . . . . .		264,551 53
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Total receipts credited motor vehicle fees account, 1922 . . . . .		\$5,885,468 16
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The cost of running the Registry of Motor Vehicles for the year 1922 was \$648,725.90, which was 11.54 per cent of the net fees collected, as compared with 11.67 per cent for the year 1921 and 11.27 per cent for the year 1920. This cost, deducted from the receipts of the year, left available for legislative appropriation for highway work by the 1923 Legislature the sum of \$5,236,742.26.

The following statement gives an analysis of expenditures for the year by the Registry:—

#### EXPENDITURES FOR THE FISCAL YEAR 1922.

##### Personal services:

Regular pay roll . . . . .	\$318,078 91	
Overtime . . . . .	19,658 11	
	<hr/>	\$337,737 02

##### Supplies:

Books, maps, etc. . . . .	\$436 68	
Typewriter supplies . . . . .	736 25	
Adding machine supplies . . . . .	42 86	
Other supplies . . . . .	955 04	
Stationery . . . . .	8,985 80	
Typewriter repairs . . . . .	1,285 65	
Other repairs . . . . .	242 63	
	<hr/>	12,684 91

##### Equipment:

Typewriter machines . . . . .	\$2,137 62	
Adding machines . . . . .	696 20	
Other machines . . . . .	2,024 29	
	<hr/>	4,858 11

##### Furniture:

Desks . . . . .	\$1,421 60	
Filing cabinets . . . . .	7,366 04	
Chairs . . . . .	418 67	
Other articles as listed below:		
Rest and recreation rooms . . . . .	657 58	
Tables . . . . .	420 21	
Miscellaneous . . . . .	131 39	
Electric fans . . . . .	1,160 33	
	<hr/>	11,575 82

## Travel:

Employees . . . . .	\$25,729 25	
Automobiles (owned by employees) . . . . .	54,521 58	
Other traveling expenses . . . . .	2,858 97	
Motor cycle equipment . . . . .	166 67	
Auto top . . . . .	325 00	
		<hr/>
		\$83,601 47

## Other services and expenses:

Expressage . . . . .	\$420 73	
Postage . . . . .	37,021 95	
Printing . . . . .	29,325 44	
Other reports . . . . .	3,519 58	
Telephone . . . . .	2,783 82	
Premium on bonds of employees . . . . .	132 50	
Rent . . . . .	24,198 55	
Water and ice . . . . .	872 20	
Cleaning . . . . .	495 00	
Towels . . . . .	589 83	
Soap . . . . .	111 11	
Special services (labor and police) . . . . .	2,033 10	
Other services as listed below:		
Badges for inspectors . . . . .	25 00	
Clocks and regulating . . . . .	217 38	
Commissions as justices of the peace . . . . .	122 00	
Headlight . . . . .	901 45	
Number plates . . . . .	95,141 91	
Sundries . . . . .	45 06	
Sign painting, etc. . . . .	311 96	
		<hr/>
		198,268 57

Total . . . . . \$648,725 90

The total amount available for 1922 was \$658,056.65.

The following comparative statement for the years 1921 and 1922 shows very plainly the increase of work as occasioned by additional registrants and licensees, etc.:—

	1921.	1922.
Automobile registrations . . . . .	305,471	378,839
Highest number plate assigned . . . . .	259,655	321,573
Commercial registrations . . . . .	55,261	71,518
Highest number plate assigned . . . . .	B55,150	B65,598
Motor cycle registrations . . . . .	12,048	11,675
Highest number plate assigned . . . . .	11,393	10,731

	1921.	1922.
Motor cycle dealers' registrations . . . . .	51	39
Manufacturers' or dealers' registrations . . . . .	1,848	1,742
Additional cars (dealers) . . . . .	2,848	2,995
Repairers . . . . .	280	366
Licenses to operate:		
Operators . . . . .	36,420	51,208
Chauffeurs . . . . .	41,021	46,818
Operator renewals . . . . .	211,349	222,482
Chauffeur renewals . . . . .	91,729	123,665
Total licenses . . . . .	380,519	444,173
Examinations . . . . .	93,501	121,245
Copies of certificates and licenses issued . . . . .	17,337	22,486
Duplicate automobile number plates . . . . .	7,552	8,549
Duplicate motor cycle number plates . . . . .	197	116
Miscellaneous applications . . . . .	843	198
Total number of applications handled . . . . .	800,315	965,915
Fees received . . . . .	\$4,712,890 00	\$5,685,527 05
Miscellaneous receipts . . . . .	920 38	415 19
Total fees . . . . .	\$4,713,810 38	\$5,685,942 24
Motor vehicle fees rebated (deducted) . . . . .	69,185 55 <sup>1</sup>	65,025 61 <sup>1</sup>
Net fees . . . . .	\$4,644,624 83	\$5,620,916 63
Court fines received by the Treasurer and Receiver-General . . . . .	208,173 27	264,551 53
Total receipts credited motor vehicle fees account . . . . .	\$4,852,798 10	\$5,885,468 16
Personal services . . . . .	\$299,945 23	\$337,737 02
Expenses . . . . .	242,465 86	310,988 88
Total expenses . . . . .	\$542,411 09	\$648,725 90

### CHANGES IN SYSTEM.

The year 1922 completes the first year when both the registration certificates and licenses were made up from stubs attached to the application blanks which the applicant is re-

<sup>1</sup> The motor vehicle fees rebates is an item that probably is not given much thought or consideration by either the public or the Legislature. This amount is paid out by the Registry in small checks to each person who surrenders his certificate of registration and number plates before August 1, and also to each person registering a second motor vehicle in a lower horse-power classification than one formerly registered during the year. The requirements of the law are somewhat complicated, and a great amount of correspondence is necessary. During the summer months as many as 500 to 800 rebate checks a week are mailed. The checks are scheduled, and the Registry is reimbursed from the treasury for rebates paid. As many as six clerks are required on this item alone, which greatly increases the work of handling re-registrations. Many States pay no rebates on registrations.



quired to fill out in part. The stub, validated by the Registry clerk at the counter, is returned immediately to the waiting applicant, and is the only paper required by him for the entire year. Massachusetts is one of the very few States issuing permanent certificates and licenses over the counter, and the use of the stub partly filled out by the applicant is a great economy for the State and a benefit to the applicant in time saved at the counter.

#### DITTO SYSTEM AND ADVANCE REGISTRATIONS.

At the beginning of 1922 a new system of recording registrations was introduced. By the use of so-called "ditto" machines (duplicating devices) the registration records are copied once on the typewriter and then as many copies as necessary may be made. The Registry makes five copies: one for the official office records, showing ten registrations numerically arranged on each page and bound in books of 500 sheets; a second such list for public use; a third such list furnished the Auto List Publishing Company, which prints registrations in a book for commercial use; a fourth record printed on card stock and cut up in a cutting machine so that each sheet gives ten cards which are filed alphabetically according to the registrant's name; and a fifth list, also on card stock, which is cut up and filed by engine number of the car registered. A reference to any one of these five records gives all the information recorded, including owner's name and address, year, make and type of car registered, engine and maker's number, date registered, fee paid and number of plates assigned.

In addition, gummed slips are used in such a way that the owner's name and address is copied on them, and these slips are perforated so that they can be torn, thus giving the Registry small addressed labels, which are pasted on blanks, so that every person who had registered an automobile during 1922 was mailed a new blank for 1923 registration in October, 1922.

This system, on a conservative estimate, has saved the Department the services of twenty-five clerks for the entire year, and much temporary service formerly required in sending out blanks, etc.

## INDEX OF LICENSES.

A change in the system of indexing licensed persons has also been made, so that each card serves for a ten-year record of the person licensed, the number and date of each renewal license being posted to the card which must necessarily be in the file. Cards are written only for new licenses. This system saves the necessity of writing over 300,000 new cards and destroying a like number of old cards each year, which used to be the procedure. But even more important is the fact that under this system clerks in the filing division of the Registry are practically prevented from any opportunity of error, because they must find the correct card before posting the new record. Under the old system many records were incorrectly destroyed. Now that every one must be examined for a license, loss of the record is even more vital, and might mean an examination not otherwise required.

The public insist on losing licenses and certificates regularly, and for their protection the files of the Registry are kept just as carefully as possible, and when the fact is considered that a total of nearly two million index cards and applications (two years' records) are on file and must be immediately available at all times, it is not surprising that an occasional record is lost or misfiled.

## NATURE OF WORK PERFORMED.

The following statement shows the nature of the work performed in each of the seventeen main groups, known as sections, into which the activities of the Registry are divided, the title of the person in charge, and the number of employees: —

SECTION.	In Charge.	Number of Em- ployees.	Nature of Work.
Registrar's . .	Secretary.	5 clerks. 6 stenographers.	Administrative; revocations and suspensions; court abstracts; reports.
Chief clerk's . .	Secretary.	1 clerk. 1 stenographer.	Administrative, personnel; direction of issuance of registrations and licenses; acting registrar.
Examining and in- vestigating.	Chief inspector. Supervisor of clerks.	4 clerks. 8 stenographers. 66 inspectors.	Examining applicants for licenses; investigating motor vehicle accidents, etc.

SECTION.	In Charge.	Number of Employees.	Nature of Work.
Headlight . . .	Inspector.	Assistant inspector. 1 stenographer. 1 clerk.	Headlights; rear lights.
Statistics . . .	Inspector.	2 stenographers.	Accident tabulation and analysis; data for safety campaign; publicity; police bulletins.
Motor vehicle identification.	Inspector. Supervisor of clerks.	15 clerks. 5 stenographers.	Engine number records; stolen car records; dealers' reports and investigations.
Counter . . .	Supervisor. Assistant supervisor.	3 tellers. 16 clerks.	Issuing of number plates and renewal licenses to the public.
Springfield Branch	Clerk.	1 clerk.	Issuing of number plates and reissues only.
Mail . . .	Supervisor. Assistant supervisor.	25 clerks.	Sorting mail; assigning number plates and licenses to mail applications.
Cashier . . .	Cashier. Assistant cashier.	2 clerks.	Banking fees received by mail, counter and examining sections; accounting for same; analyzing and preparing registration and license statistics.
Correspondence .	Supervisor. Assistant supervisor.	13 stenographers. 5 clerks.	Letters on questioned applications, adjustments, general information.
Entering . . .	Supervisor. Assistant supervisor.	28 typists.	Recording registrations; sorting renewal licenses; typewriting licenses.
Filing . . .	Supervisor.	14 clerks.	Filing records; posting renewal licenses to records; phone information for public.
Miscellaneous .	3 assistant supervisors.	15 clerks. 6 stenographers.	Issuing duplicates and copies of certificates and licenses; sorting and mailing license renewal blanks; reissues and rebates entire work.
Shipping . . .	Assistant supervisor.	10 clerks.	Addressing and shipping all number plates for mail; mailing out-going mail, — original licenses, renewal blanks, etc.
Supplies . . .	Supervisor.	3 laborers. 1 stenographer.	Handling requests for supplies; handling all number plates for mail and counter; multigraphing and duplicating work.

## RECOMMENDATIONS OF THE DEPARTMENT FOR LEGISLATION RELATING TO THE REGISTRY OF MOTOR VEHICLES.

See page 69 of this report.



## DIVISION OF WATERWAYS AND PUBLIC LANDS.

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### BOSTON HARBOR.

#### THE COMMONWEALTH FLATS AT SOUTH BOSTON.

##### *Commonwealth Pier No. 5.*

As the business at this pier increased it became necessary to furnish additional means of access from the first to the second floor, especially from the level of Northern Avenue to the level of the Viaduct. Plans for a stairway to connect these levels were made when the pier was built, but such construction seemed unnecessary at that time. On Jan. 3, 1922, a contract was made with George M. Bryne to furnish materials and build a stairway from the street level of Northern Avenue to the Viaduct at a contract price of \$2,736. This work was completed April 24, 1922.

An examination of the railroad track trestle at the heating plant showed that the trestle was badly decayed and unsafe. A contract was made on Aug. 7, 1922, with William L. Miller Company to remove the existing trestle and construct a new one to replace it at a contract price of \$2,396. This work was completed Sept. 11, 1922.

##### *Commonwealth Pier No. 6.*

When this pier was built it was not deemed advisable to lay a permanent paving because of the possibility that serious settlement on the new filling might occur. The Commonwealth, however, agreed to relay the paving at any time within five years upon request from the Boston Fish Market Corporation. This repaving has been in progress at intervals for some years.

Under contract of Aug. 24, 1922, with the B. E. Grant Company the remainder of this repaving was completed Oct.

30, 1922, at a cost of \$23,686.24. This finishes the repaving required by the terms of the lease to the Boston Fish Market Corporation.

*Development of Land South of Summer Street.*

The city of Boston on May 27, 1921, laid out D Street from Fargo Street to Claflin Street and proceeded to build a sewer in the street so laid out. On June 5, 1922, the city laid out Claflin Street from D Street to C Street and proceeded to build a sewer in that street. The city also paved the portion of D Street laid out the previous year. It is expected that the section of Claflin Street laid out this year will be paved during the coming year.

In order that the paving might be carried on continuously the Commonwealth removed the temporary tracks crossing D Street and connected the tracks serving the land between D and E streets, north of the Army stores, with the tracks lying between the two Army stores on D and E streets. This leaves D Street entirely unobstructed by a railroad track except at Fargo Street, where the main line for serving all the territory south of Summer Street crosses.

During the year the Federal government released to the Commonwealth the easterly or No. 2 storehouse of the Army stores, four sections of the No. 1 storehouse, located on E Street, and the heating plant at the southerly end of storehouse No. 1.

The southerly half of storehouse No. 2 has been assigned to the Highway Division as a repair shop for trucks and road building machinery. A portion of the southeasterly corner is also used by this Division as a testing laboratory. To fit this portion of the building for these uses certain changes have been necessary.

The northerly half of this building is used by the Post Office Department as a repair shop for automobile trucks. The southwesterly corner of the storehouse has become the property of George C. Corcoran under an agreement for an exchange of property made April 8, 1921, to enable the Commonwealth to develop this territory.

Of the seven sections contained in storehouse No. 1, three are in use by the Quartermaster's Department, one has been



assigned to the Post Office Department for storage use, and three released to the Commonwealth remain unoccupied. The heating plant, furnishing heat to both storehouses, has been repaired and is at present operated by the Highway Division. The expense of this heating is shared by the Post Office Department. Negotiations are in progress for the lease of the unoccupied portions of this storehouse.

No additional sales of land have been made by the Commonwealth in this territory during the year.

When tracks were built by the Federal government to serve this property, it was found necessary to cross one end of a piece of land owned by the Standard Sanitary Manufacturing Company at the corner of B Street and Cypher Street. The arrangements made for this occupancy by the United States were only temporary. To acquire permanent rights in this area the Commonwealth is arranging to exchange for this piece of land a lot of substantially the same size located on C Street. The final details of this exchange are not yet completed.

#### *Commonwealth Land off Summer Street.*

When the sale was made to the United States of the land for the Army base, permission was given the Federal government to occupy for open storage an area lying between the Army base and the Viaduct leading to Commonwealth Pier, and between Summer Street and the railroad yard of the Commonwealth. Upon this area the Federal government built an extensive railroad yard for use during the war. As the development of the property proceeded the United States wished to acquire the larger part of this area for use as a permanent railroad yard in connection with the Army base.

Such use of this property did not appear to the Department to be advantageous, as it would interfere with the development for commercial purposes of the land near Summer Street. After lengthy negotiations an agreement has been reached by which the Federal government surrenders to the Commonwealth all rights in this property upon condition that a portion of the railroad yard will be left for use by the Commonwealth and may be used in time of emergency by the United States. From the remainder of the property near Summer Street the



Federal government is to remove all its tracks, leaving the area free for development by the Commonwealth. The details of this agreement are at present under consideration.

Temporary permits have been given for the use as freight loading stations of the platform of the freight house built by the Commonwealth at the foot of the ramp on D Street and of a location alongside the track leading into the easterly side of Commonwealth Pier. Permits have been granted also for the use of three small lots on Northern Avenue between Commonwealth Pier and the Fish Pier. This authority has been granted in each case with a provision for termination at short notice in order that no permit for use and occupancy of any part of this area may interfere with any general development of the property.

To develop the property lying southerly of Northern Avenue, bounded westerly by the land of the New York, New Haven & Hartford Railroad Company and southerly and easterly by the tracks to Commonwealth Pier, an arrangement was made with the railroad company to allow the construction of a street about 50 feet wide from Northern Avenue southerly across the tracks at the entrance to the State freight yard and over the location of the extension of B Street to an intersection with what was formerly Congress Street. This roadway is one-half on land of the Commonwealth and one-half on land of the railroad company, and is a private roadway for the use of the railroad company and to give access to property of the Commonwealth. The land of the railroad company bordering on the roadway is a freight yard.

The railroad company, in addition to allowing the use of its land, gave the use of the paving already laid on its portion of roadway. The Commonwealth agreed to repave the whole width of the new roadway and to put in the sewers and water pipes necessary to serve whatever buildings are erected later along the part of the roadway belonging to the Commonwealth. For carrying out this work a contract was made on May 1, 1922, with the B. E. Grant Company. Work was completed Sept. 22, 1922, at a cost of \$33,809.99. Toward this cost the New York, New Haven & Hartford Railroad Company made a contribution of \$2,000.

## THE COMMONWEALTH FLATS AT EAST BOSTON.

*Aircraft Landing Field.*

Under the provisions of chapter 404 of the Acts of 1922, a lease was given on June 29, 1922, to the United States of America to use as an aircraft landing field an area of the Commonwealth flats at East Boston, including two runways, each 200 feet wide and 1,500 feet long, crossing at right angles, and an area 600 feet long and 400 feet wide for the location of hangars and other necessary buildings.

This lease was given at a rental of \$1 per year, as provided in the statute, with the privilege of annual renewal for a period of ten years.

Plans and specifications were prepared for the construction of the landing field by leveling the surface and covering it with cinders, and for the erection of two steel hangars each 120 feet long and 65 feet wide. The materials for these hangars above the foundations are to be furnished by the Federal government to the Commonwealth for the use of the militia.

On June 30, 1922, proposals were received for the construction of the field and the erection of hangars. At the prices submitted the cost of the work exceeded the appropriation made by chapter 404 of the Acts of 1922 by the sum of \$9,784. This amount was raised and contributed by the Boston Chamber of Commerce. The city of Boston also agreed to furnish and lay at its own expense the pipe to provide water to the hangars.

A contract was made on Aug. 15, 1922, with Vincent N. Bellizia for constructing the landing field and approaches at an estimated cost of \$35,744. For building foundations and erecting the two hangars a contract was made on Sept. 1, 1922, with Coleman Brothers, Inc., at an estimated cost of \$9,040.

Work on the construction of the landing field was begun at once, but has been seriously hindered by the wet weather. The work of grading is, however, nearly completed and the surfacing with cinders well advanced. The construction of the foundations for the hangars was not begun until Nov. 15, 1922. The water pipe has been laid and installed by the city



of Boston, and water is now being furnished through this pipe.

On Oct. 13, 1922, a permit was granted to the Massachusetts National Guard to erect two barrack buildings adjoining the hangars and just outside the area leased to the United States. These barracks will be used by the 101st Observation Squadron in connection with their use of the field.

The landing field is located on the northerly side of the filled area. This arrangement leaves the southerly side of the filled land free to be developed for commercial purposes and allows access to the land to the east on the southerly side of the proposed central basin.

#### *Dredging, Filling and Bulkheads.*

The filling of the flats at East Boston has been continued during the year under contract of May 11, 1921, with the Atlantic, Gulf and Pacific Company and under an extension of this contract authorized April 13, 1922. Dredging has been done to form a channel 200 feet wide and 25 feet deep along the southerly side of the central basin to a connection with the deep water outside the easterly end of Governor's Island. The material excavated is being used to build a dike between the existing fill and the northerly end of the bulkhead on the southerly side of the central basin, and another dike near the easterly end of the same bulkhead and extending southerly toward the bulkhead along the main channel front. The Department plans, if funds are available, to extend this easterly dike to the bulkhead on the channel front and to fill the area enclosed. During the year under contract with the Atlantic, Gulf and Pacific Company material to the amount of 2,119,630 cubic yards has been excavated and deposited.

At present the Commonwealth has about 120 acres of filled land at East Boston. By the filling of the basin enclosed by the two dikes 110 acres will be added, making a total of 230 acres.

In dredging the channel along the southerly side of the central basin in a section about 1,000 feet long, the material was found too hard to be excavated by the suction dredge. This area must be excavated later by scoop dredges. The channel is, however, deep enough now to be used for towing



scows with material for future filling, as it has a least depth of 13 feet at mean low water, 23 feet at high water and is 200 feet wide.

In connection with this work two sections of bulkhead have been built during the year under contract of May 29, 1922, with the William L. Miller Company. One section of 1,000 feet carries the bulkhead along the channel front to the line of ownership by the Federal government around Governor's Island. This work was done at a cost of \$28.40 per linear foot. The second section, about 600 feet long, extends the bulkhead along the southerly side of the central basin. This work was done at a cost of \$28 per linear foot. It is not expected that any more bulkhead work will be required until the basin previously described has been filled.

Work on these bulkheads was seriously delayed by the inability of the contractor to get lumber ordered from the Pacific coast. Only a small amount of work remains to be done, and the bulkheads will probably be finished during the winter.

#### *East Boston Rail Connections.*

Under the provisions of chapter 494 of the Acts of 1921 an agreement was made on June 27, 1922, with the East Boston Company for the acquisition by the Commonwealth for a railroad track of a right of way 60 feet wide across land already owned or to be acquired by the East Boston Company. The price for this land was fixed at 40 cents per square foot. This railroad track is to extend from the Boston & Albany Railroad tracks near Prescott Street to and across the tracks of the Boston, Revere Beach & Lynn Railroad to the property of the Commonwealth near Jeffries Point. A taking of this right of way was made by the Department on July 5, 1922.

A contract with J. F. Kennedy Company was made on Aug. 7, 1922, for building a railroad track about 3,000 feet long from the tracks of the Boston & Albany Railroad near Prescott Street through the strip taken from the East Boston Company and across the tracks of the Boston, Revere Beach & Lynn Railroad to the flats of the Commonwealth. The construction of the crossing with the tracks of the Boston, Revere Beach & Lynn Railroad was not included in this contract. Plans for

such crossing were submitted to the Department of Public Utilities for approval, as provided by the statute, with the request that said Department prescribe the method of protection by signals to ensure the safe operation of trains on the Commonwealth track and on the track of the Boston, Revere Beach & Lynn Railroad. The approval of these plans was received on Oct. 24, 1922, together with a description of the method of signaling required. Preparations are now being made to carry these plans into effect.

The grading of the location for the track has been substantially completed and a large part of the gravel ballast deposited. The rails and ties are on the ground, but the laying of the track has been delayed owing to the inability of the contractor to get the necessary tie plates. The track will probably not be completed before the frost leaves the ground in the spring.

#### DORCHESTER BAY DREDGING.

On April 12, 1922, a hearing was held upon the petition of the Savin Hill Yacht Club and others for dredging in front of the Savin Hill Yacht Club House.

A contract was made on May 8, 1922, with the Bay State Dredging and Contracting Company for dredging to the depth of 8 feet at mean low water of the basin in front of the club house of the Savin Hill Yacht Club at Savin Hill. The contract prices for the work were: for dredging the basin and disposing of dredged material, 49 cents per cubic yard, scow measurement; for removing and disposing of boulders, \$18 per cubic yard; for removing piles in area to be dredged and replacing same after completion of dredging, \$350.

This work was completed June 20, 1922, at a cost of \$13,-943.58. Toward the cost of this work the Savin Hill Yacht Club has made a contribution of \$500 and is to make a further contribution of \$500 in the coming spring.

Amount expended during the year, \$14,609.16.

Total expenditure to Dec. 1, 1922, \$84,780.47.



## HINGHAM HARBOR.

On Feb. 17, 1922, a hearing was held upon a petition of George M. Thompson and others for redredging the channel and basin in this harbor.

A contract was made on Aug. 14, 1922, with W. S. Rendle & Son Company to redredge to a depth of 6 feet at mean low water the channel and anchorage basin in this harbor. The contract prices for this work were: for dredging and disposing of the dredged material, 32 cents per cubic yard, scow measurement; for removing and disposing of boulders, \$12 per cubic yard. This work was completed Nov. 17, 1922, at a cost of \$23,186.88.

Toward the cost of this work a contribution of \$3,500 was made by the town of Hingham.

Amount expended during the year, \$21,875.58.

Total expenditure to Dec. 1, 1922, \$38,056.27.

## MALDEN RIVER.

In September a request was received from the Standard Oil Company of New York for the removal of a shoal at the upper end of this river just below the Medford Street bridge. Under an agreement with the Gerrish Dredging Company this shoal was excavated at a cost of \$1,200. Toward this cost the Standard Oil Company of New York made a contribution of \$600.

Amount expended during the year, \$1,268.70.

Total expenditure to Dec. 1, 1922, \$32,268.70.

## MYSTIC RIVER.

In June a request was received from the Merrimac Chemical Company for additional dredging in the channel of this river below Malden bridge. The company agreed to contribute one-third of the cost of this work.

A contract was made on July 26, 1922, with W. S. Rendle & Son Company for dredging an area on the northerly side of the channel in Mystic River just below Malden bridge and the removal of a small shoal about 700 feet above the bridge,



all to the depth of 16 feet at mean low water. The contract prices for this work were: for dredging and disposing of the dredged material, 33 cents per cubic yard, scow measurement; for removing and disposing of boulders \$10 per cubic yard.

This work was completed Oct. 26, 1922, at a cost of \$11,535.82. Toward this cost the Merrimac Chemical Company made a contribution of \$4,182.50.

Amount expended during the year, \$10,970.48.

Total expenditure to Dec. 1, 1922, \$410,029.26.

#### DREDGING OFF NEW HAVEN DOCKS, SOUTH BOSTON.

In August a petition was filed by the New York, New Haven & Hartford Railroad Company asking that the area between the channel line and the railroad piers 1 and 2 be dredged to a depth of 30 feet at mean low water, to allow deep draft vessels to dock at these piers. Toward the cost of this work the company agreed to make a contribution of one-fourth of the cost, but not more than \$10,000.

A contract was made on Oct. 23, 1922, with the Bay State Dredging and Contracting Company for dredging to the depth of 30 feet at mean low water of a channel leading from the main ship channel in Boston Harbor to dock No. 1 of the New York, New Haven & Hartford Railroad at South Boston. The contract prices for this work are: for dredging the channel and disposing of the dredged material, 39.9 cents per cubic yard; for removing and disposing of all boulders, \$16 per cubic yard. This work is now in progress.

Amount expended during the year, \$17,873.71.

#### RIVERS, HARBORS, TIDEWATERS AND FORESHORES OUTSIDE OF BOSTON HARBOR.

For the improvement of rivers, harbors, tidewaters and foreshores outside of Boston Harbor, in accordance with the provisions of section 11 of chapter 91 of the General Laws, an appropriation of \$250,000 was available during 1922.

Petitions were filed with the Division during the year for surveys and improvements in the following localities: Bucks Creek, Chatham; Cape Poge Bay, Edgartown; Cedar Point,

Scituate; Crescent Beach, Mattapoissett; Duxbury Harbor, Duxbury; East Chop Sea Wall, Oak Bluffs; Essex River, Essex; Falmouth Inner Harbor, Falmouth; Lobster Cove, Gloucester; Lynn Harbor and Saugus River, Lynn; Megansett Harbor, Falmouth; Nobscusset Harbor, Dennis; North Scituate Beach, Scituate; Second Cliff, Scituate; Sesuit Harbor, Dennis.

Public hearings have been held, certain surveys and estimates of cost have been made, but no actual work has been done to carry out improvements petitioned for at: Bucks Creek, Chatham; Cape Poge Bay, Edgartown; Cedar Point, Scituate; Crescent Beach, Mattapoissett; Duxbury Harbor, Duxbury; East Chop Sea Wall, Oak Bluffs; Lobster Cove, Gloucester; Second Cliff, Scituate; Sesuit Harbor, Dennis.

Information relating to work previously done in various rivers and harbors in the Commonwealth may be found in the annual reports of the Board of Harbor and Land Commissioners, the Commission on Waterways and Public Lands, in previous reports of this Division, and in the tables in the Appendix accompanying the present report. These tables show localities, character of work, appropriations and expenditures by the Commonwealth and certain appropriations and expenditures by the Federal government.

An account of the work done during the year 1922 for the improvement of rivers, harbors, tidewaters and foreshores outside of Boston Harbor follows: —

#### ANNISQUAM RIVER.

In December, 1921, an examination of the riprap at the bank on the east side of the channel showed in two places a settling of the top stones of the riprap. Under an arrangement with the T. E. Reed Company the necessary repairs were made at a cost of \$1,639.54.

During the summer the attention of the Division was called to two shoals in this river, — one at Wolf Hill and the other opposite River View. Under an agreement with the Bay State Dredging and Contracting Company both these shoals were removed at a cost of \$6,811.35.

Amount expended during the year, \$9,204.04.

Total expenditure to Dec. 1, 1922, \$116,464.79.



## BRANT ROCK, MARSHFIELD.

In December, 1921, the attention of the Division was called to the condition of the sea wall south of Brant Rock. An examination showed a wearing away of the beach under one of the jetties built by the Commonwealth in 1920 to support this wall. Under an agreement with Arthur J. Mitchell 101.75 tons of stone riprap were placed around this spur jetty. The cost of this work was \$610.65.

Amount expended during the year, \$698.15.

Total expenditure to Dec. 1, 1922, \$5,401.96.

## ESSEX RIVER, ESSEX.

On Feb. 17, 1922, a hearing was held upon the petition of Carl C. Emery and others for dredging the channel in Essex River.

A contract was made on Aug. 7, 1922, with the Bay State Dredging and Contracting Company to dredge in this river a channel 6 feet deep at mean low water and 60 feet wide on the bottom from Cross Island to the highway bridge in Essex. The contract prices for this work are: for dredging and disposing of the dredged material, 54 cents per cubic yard, scow measurement; for removing and disposing of boulders, \$18 per cubic yard. This work is now in progress.

Amount expended during the year, \$33,428.33.

Total expenditure to Dec. 1, 1922, \$38,428.33.

## FALMOUTH INNER HARBOR.

On Feb. 17, 1922, a hearing was held upon the petition of the selectmen of Falmouth and others for dredging in Falmouth Inner Harbor.

A contract was made on April 26, 1922, with William E. Burke for dredging in the entrance channel to this harbor to a depth of 10 feet at mean low water and a width of 100 feet on the bottom. The contract prices for this work were: for dredging and disposing of dredged material, 57 cents per cubic yard, scow measurement; for removing and disposing of



boulders, \$15 per cubic yard. This work was completed June 9, 1922, at a cost of \$7,794.75.

An examination of the west jetty in August of this year showed some leakage of sand through the joints of the older portion of the structure. Under an agreement with John A. Davis the sand west of the jetty was excavated and the holes in the jetty closed with concrete, at a cost of \$783.60.

Amount expended during the year, \$9,218.37.

Total expenditure to Dec. 1, 1922, \$108,536.17.

### GLOUCESTER HARBOR.

On Feb. 17, 1922, a hearing was held upon the petition of the mayor of Gloucester and others for a continuation of dredging to deepen the channels to the upper harbor at Gloucester. At the hearing request was made for the removal of rocks dangerous to navigation in this harbor. The attention of the petitioners was called to the prohibitive cost of carrying out both dredging and rock removal, and those present were asked to indicate which in their opinion is the more necessary improvement. The removal of rocks was felt to be the more important at present. After this hearing other petitions asking for rock excavation were filed with the Division.

A contract was made on Sept. 22, 1922, with George T. Rendle for the removal of certain rocks and ledge from Gloucester Harbor at the following contract prices: for breaking up and removing the nine points or areas of ledge near Five Pound Island to the depth of not less than 16 feet at mean low water, the lump sum of \$14,993; for removing three isolated rocks or points of rock near Parkhurst's Wharf, the lump sum of \$750; for removing two isolated rocks or points of rock in Harbor Cove near the Parmenter-Rice and Atlantic Halibut Company's wharves, the lump sum of \$750; for removing one isolated rock or point of rock near the wharf of the Gloucester Fresh Fish Company, the lump sum of \$750; for removing three isolated rocks or points of rock near the head of the harbor, — one near the entrance to the dock between the wharves of Frank C. Pearce Company and the Gorton-Pew Fisheries Company and the other two opposite and about 170 feet southeasterly from the outer end of the

latter wharf, — the lump sum of \$750. This work is now in progress.

Amount expended during the year, \$11,192.32.

Total expenditure to Dec. 1, 1922, \$118,437.06.

#### HERRING RIVER, HARWICH.

The work of furnishing and placing riprap under contract of May 13, 1921, with William E. Burke was completed May 10, 1922, at a cost of \$5,168.46.

Further consideration was given during the year to the petition of J. Arthur Jacobs and others, heard during 1921, for protective work east of Herring River entrance at West Harwich. Inspections and examinations showed a rapid cutting back of the bank at this locality, constituting an increasing menace to property.

On Nov. 8, 1922, a contract was made with George T. Rendle for furnishing and placing about 3,500 tons of stone riprap and chips in a stone jetty east of the river entrance at West Harwich. The contract price for this work is: for furnishing and placing stone riprap in the jetty and as bank protection, \$5.19 per ton. Toward the cost of this work individuals interested made a contribution of \$3,000. This work is now in progress.

Amount expended during the year, \$6,823.28.

Total expenditure to Dec. 1, 1922, \$56,992.16.

#### HYANNISPORT.

The removal of boulders from the area back of the breakwater, under contract of May 13, 1921, with William E. Burke, was completed June 23, 1922, at a cost of \$2,250.

Amount expended during the year, \$5,334.65.

Total expenditure to Dec. 1, 1922, \$65,017.76.

#### LAKE ANTHONY.

During the progress of the work of dredging under contract of May 13, 1921, with William E. Burke, a request for an increase in the area to be dredged was received from the



selectmen of Oak Bluffs. In response to this request the dredging was increased by approximately 3,975 cubic yards. Toward the cost of this additional dredging the town of Oak Bluffs made a contribution of \$500.

The entire work of dredging was completed Feb. 17, 1922, at a cost of \$11,787.25.

Amount expended during the year, \$13,044.54.

Total expenditure to Dec. 1, 1922, \$75,531.24.

#### MEGANSETT HARBOR, FALMOUTH.

On Feb. 17, 1922, a hearing was held upon a petition of Warner V. Taylor and others for dredging Megansett Harbor, Falmouth. At this hearing the petitioners suggested that the dredged material might be deposited upon the shore in the vicinity.

Proposals were received May 26, 1922, upon specifications providing for the disposal of material upon the shore or for its deposit at sea. The lowest price received was for dredging and depositing the material at sea.

The summer residents at Megansett were, however, so desirous of having the dredged material placed upon the shore as a further improvement, that an agreement was executed to pay to the Commonwealth the difference between the lowest price named in the proposals received and the price for dredging and depositing the material upon the shore.

A contract was accordingly made on June 13, 1922, with the Gerrish Dredging Company to dredge in this harbor to the depth of 6 feet at mean low water and to deposit the material upon the shore in certain specified localities. The contract prices for this work were: for dredging and disposing of the dredged material, 49 cents per cubic yard, measured *in situ*; for removing and disposing of boulders, \$12 per cubic yard. This work was completed Sept. 11, 1922, at a cost of \$17,640.00.

Toward this cost a contribution of \$2,500 was made by the town of Falmouth. In addition, in accordance with the agreement previously mentioned, the Commonwealth was reimbursed in the sum of \$2,880.

Amount expended during the year, \$18,389.89.

Total expenditure to Dec. 1, 1922, \$52,116.66.



## MENAMSHA INLET.

The work of jetty repairs and resetting of the light at the entrance to this inlet, under contract of May 13, 1921, with William E. Burke, was completed Feb. 21, 1922, at a cost of \$1,426.22.

The dredging authorized by the terms of this contract was increased during the year to allow the excavation of an additional channel in this harbor. The entire work was completed May 6, 1922, at a cost of \$10,819.20.

Amount expended during the year, \$13,413.89.

Total expenditure to Dec. 1, 1922, \$78,039.50.

## NEW BEDFORD HARBOR.

During the winter the attention of the Division was called to difficulties experienced by steamers approaching the State pier on account of a shoal lying between the two channels dredged by the United States opposite this pier. To provide a more adequate approach a contract was made on March 14, 1922, with the Bay State Dredging and Contracting Company to dredge about 33,000 cubic yards of material opposite the State pier to a depth of 25 feet at mean low water. The contract prices for this work were: for dredging and disposing of the dredged material, 34 cents per cubic yard, scow measurement; for removing and disposing of boulders, \$20 per cubic yard.

During the progress of the work additional dredging was authorized, so that 49,259 cubic yards of material were actually removed. This work was completed April 14, 1922, at a cost of \$16,748.06.

Amount expended during the year, \$17,446.81.

Total expenditure to Dec. 1, 1922, \$18,856.57.

## NOBSCUSSET HARBOR.

By chapter 351 of the Special Acts of 1915 the Board of Harbor and Land Commissioners was authorized to dredge a channel and anchorage basin in the vicinity of Old Corporation Wharf, so called, in the town of Dennis, and to expend for

the purposes of the act a sum not exceeding \$10,000, provided the town accepted the act and voted to build a public wharf and landing and an approach thereto. The town, at a special meeting held June 26, 1915, voted to accept the act and appropriated \$500 for building a public wharf, landing and approach.

On Aug. 4, 1915, a contract for this dredging was made with John H. Gerrish. By the terms of the contract the work was to be completed Feb. 1, 1916. At that date no work had been done and the contract was accordingly terminated in February, 1916.

Proposals were readvertised and a contract made on April 11, 1916, with the Maryland Dredging and Contracting Company. War conditions made it impossible for this company to continue the work at the contract price, nor was the contractor willing to resume work after the war.

In order to carry out the work a contract was made on Aug. 25, 1922, with William E. Burke for dredging to the depth of 5 feet at mean low water the basin and channel behind the breakwater at Nobscusset Harbor. The contract prices for this work were: for dredging and disposing of the dredged material, 73 cents per cubic yard; for removing and disposing of boulders, \$16 per cubic yard. This work was completed Nov. 4, 1922, at a cost of \$9,490.

Amount expended during the year, \$9,321.73.

Total expenditure to Dec. 1, 1922, \$38,355.34.

#### OAK BLUFFS SEA WALL.

The work of protecting the northerly end of the sea wall on the easterly side of Sea View Avenue, under contract of Nov. 18, 1921, with the T. A. Scott Company, Inc., was completed Jan. 19, 1922, at a cost of \$6,018.49.

Amount expended during the year, \$7,422.88.

Total expenditure to Dec. 1, 1922, \$36,574.25.

#### SAUGUS RIVER.

A survey made during the summer of the outer end of the entrance channel to this river revealed a shoaling to a navigable depth of 8 feet from the depth of 12 feet previously dredged.



A contract was made on Aug. 7, 1922, with the Bay State Dredging and Contracting Company to dredge this channel to a depth of 12 feet at mean low water for a width of 250 feet and a length of about 1,500 feet. The contract prices for this work were: for dredging and disposing of the dredged material, 64 cents per cubic yard, scow measurement; for removing and disposing of boulders, \$18 per cubic yard. This work was completed Oct. 4, 1922, at a cost of \$33,765.50.

Amount expended during the year, \$34,989.18.

Total expenditure to Dec. 1, 1922, \$163,431.53.

#### SCITUATE SEA WALLS.

The work of protecting the shores in the town of Scituate from damage by the sea has been continued during the year under the provisions of chapter 585 of the Acts of 1920. Conferences were held at the beginning of the year with the Plymouth County commissioners and the selectmen of Scituate to consider reports of the engineering department and to determine where the need for shore protection seemed most urgent. The work of the year has been carried on in accordance with the decisions reached at these conferences.

*Glades.* — The work of building the sea wall under contract of Sept. 14, 1921, with Arthur J. Mitchell was completed May 6, 1922, at a cost of \$16,526.77.

Later in the year the gap in this wall between the two sections built last year was raised to the height of the new wall. This work was done in connection with the work at the wall near Beach Street.

*North Scituate, Beach Street.* — On May 1, 1922, a contract was made with John Williams & Co. for the construction of about 40 spur jetties and 1,015 feet of concrete facing in front of the existing wall east of Beach Street. The contract price for furnishing materials and building the concrete wall facing and spur jetties was \$10.90 per cubic yard of concrete measured in the completed work.

Before the completion of the contract other repair work in the vicinity became necessary and was included under this contract. Additional jetties were built in front of the wall south of the life saving station, a short section of wall ad-



joining the north side of the life saving station was repaired, and work done for the maintenance of certain old jetties in the locality.

Work under this contract was completed Aug. 22, 1922, at a cost of \$14,600.05.

*Sand Hills.* — On May 1, 1922, a contract was made with W. F. Loud & Sons Company for the construction of about 250 linear feet of concrete sea wall, with return on one end, and 5 concrete spur jetties. The contract prices for this work were: for furnishing materials and constructing the main wall and return wall, \$12.25 per cubic yard of concrete measured in the completed work; for furnishing materials and constructing each spur jetty, \$100 for each complete jetty 15 feet long.

During the progress of the work a request was received from the selectmen that an opening be left in this wall opposite the lot owned by the town and used as a bathing beach. Arrangements were accordingly made with the contractor to leave the opening requested and to furnish and fit planks to allow the closing of the gap during the winter. The selectmen assumed responsibility for the placing of these planks and for any damage that may result from the leaving of this opening. In accordance with a later request of the selectmen the wall was extended 35 feet at its northerly end to afford additional protection.

This work was completed July 12, 1922, at a cost of \$4,858.34.

*Third Cliff.* — On Feb. 10, 1922, a contract was made with W. H. Connor & Son Company to place stone riprap to protect the face of the northerly portion of the bluff at Third Cliff and to place stone chips and riprap in front of the sea wall between First and Second Cliffs. The contract prices for this work are: for furnishing the stone riprap and depositing it in place for a distance of about 450 feet on the northerly end of Third Cliff, \$3.87 per ton; for furnishing the stone riprap and depositing it in place upon the remainder of the area to be protected at Third Cliff, \$4 per ton; for furnishing the stone riprap and depositing it in place in front of the sea wall between First and Second Cliffs, \$3.75 per ton.

The work under this contract can be done best during the cold weather while the ground is frozen. The contractor,

however, was able to do only a small part of the work before the warm weather came in the spring. The work was therefore stopped during the summer and fall but is to be resumed early in the winter.

Amount expended under this contract during the year, \$1,002.57.

Total expenditure on shore protection at above locations to Dec. 1, 1922, \$132,001.64.

#### TAUNTON RIVER, SOMERSET.

The work of dredging an area between Slades Ferry bridge and Brightman Street bridge, under contract of Nov. 3, 1921, with the Bay State Dredging and Contracting Company, was completed March 8, 1922, at a cost of \$25,854.94. Toward the cost of this work the New England Oil Refining Company made a contribution of \$12,500.

Amount expended during the year, \$24,061.78.

Total expenditure to Dec. 1, 1922, \$28,697.18.

#### WEST BAY, BARNSTABLE.

The work of protecting the bank east of the entrance channel and the crest of the beach west of the west jetty, under contract of May 13, 1921, with William E. Burke, was completed Jan. 25, 1922, at a cost of \$6,477.72.

Amount expended during the year, \$4,352.41.

Total expenditure to Dec. 1, 1922, \$88,420.36.

#### WESTERN AVENUE SEA WALL, GLOUCESTER.

Chapter 502 of the Acts of 1922 provides for co-operative action by the Division, the county of Essex and the city of Gloucester in the construction of a sea wall, park and roadway along a portion of Western Avenue. The Division is authorized to build the sea wall at a cost not to exceed \$60,000, but may expend from State funds only \$25,000, and is not to undertake the work until the receipt from the city of the sum necessary to complete the wall.

On Oct. 16, 1922, complete plans and specifications for the sea wall were filed with the county commissioners and the city council in accordance with the provisions of the act.



The Essex County commissioners, by vote of Oct. 17, 1922, accepted this act and the city council passed a vote in acceptance Oct. 18, 1922.

Proposals were received by the Division Oct. 13, 1922. Early in November the city of Gloucester forwarded a contribution of \$35,000 toward the cost of the work.

On Nov. 10, 1922, a contract was made with the Bay State Dredging and Contracting Company to build about 76 linear feet of granite sea wall, 1,008 linear feet of granite-faced concrete sea wall, and 47 linear feet of concrete sea wall, together with three sets of granite steps, south of Western Avenue, near the mouth of Annisquam River, Gloucester. This work is now in progress.

Amount expended during the year, \$3,371.

#### WITCHMERE HARBOR, HARWICH.

The work of placing stone chips along the west side of the westerly jetty, under contract of Nov. 18, 1921, with the T. A. Scott Company, Inc., was completed Jan. 3, 1922, at a cost of \$2,193.78.

Amount expended during the year, \$3,039.90.

Total expenditure to Dec. 1, 1922, \$38,005.

#### MISCELLANEOUS.

##### GREAT PONDS.

Jurisdiction over great ponds belonging to the Commonwealth was conferred upon the former Board of Harbor and Land Commissioners by chapter 318 of the Acts of 1888. This act applies to ponds containing in their natural state 10 or more acres of land. Authority to sell and convey or lease, subject to the approval of the Governor and Council, any of the islands owned by the State in great ponds, was later conferred by chapter 379 of the Acts of 1904, now section 2 of chapter 91 of the General Laws.

During the year the Division has considered matters relating to: Baddacook Pond, Groton; Furnace Pond, Pembroke; Great Pond, Edgartown; Greenwater Pond, Becket; Indian Head Pond, Hanson and Pembroke; Lake Quinsigamond, Shrewsbury; Lake Winthrop, Holliston; Little Island Pond,



Plymouth; Long Pond, Blandford; Long Pond, Tyringham; Monponsett Ponds, Halifax and Hanson; Morse Pond, Wellesley; Niles Pond, Gloucester; Shiverick Pond, Falmouth; Shubael Pond, Barnstable; Silver Lake, Pittsfield; Snipatuit Pond, Rochester; Spy Pond, Arlington; Swan Pond, Dennis; Uncas Pond, Franklin; Yokum Pond, Becket.

A list of the lakes and ponds of the State with areas of 10 or more acres, given by counties, is printed in the report of the Commission on Waterways and Public Lands on "Water Resources of Massachusetts, 1918."

By chapter 12 of the Resolves of 1921 the Division of Waterways and Public Lands was directed to make surveys, examinations and maps of the great ponds in the Commonwealth except those under the jurisdiction of any State board, commission or department other than the Department of Public Works, and was authorized to expend \$5,000 for this purpose during the years 1921 and 1922. In accordance with this statute surveys have been made during the year of the following ponds:—

NAME.	Town.	Area surveyed (Acres).	Natural Area (Acres).	Maximum Depth (Feet).
North Cotuit or Hamlin's Pond . . . .	Barnstable . . . .	148.6	148.6	47.0
Middle Cotuit Pond . . . .	Barnstable . . . .	108.0	108.0	38.2
South Cotuit Pond . . . .	Barnstable . . . .	118.0	118.0	67.5
Shubael Pond . . . .	Barnstable . . . .	28.7	28.7	17.2
Pond north of Hamlin's Pond . . . .	Barnstable . . . .	10.4	10.4	—
Oldham Pond . . . .	Hanson and Pembroke	234.7	234.7	14.8
Furnace Pond . . . .	Pembroke . . . .	106.6	106.6	9.0
Great Sandy Bottom Pond . . . .	Pembroke . . . .	108.5	108.5	23.6
Little Sandy Bottom Pond . . . .	Pembroke . . . .	61.2	61.2	16.4
Indian Head Pond . . . .	Hanson . . . .	120.5	120.5	8.7
Maquan Pond . . . .	Hanson . . . .	48.0	48.0	13.5
Greenwater Pond . . . .	Becket . . . .	92.97	59.66	37.5
Long Pond or Upper Goose Pond . . . .	Lee and Tyringham . . . .	49.0	44.3	26.7
Goose Pond . . . .	Lee and Tyringham . . . .	246.0	167.7	35.6
Shiverick's Pond . . . .	Falmouth . . . .	10.8	10.8	—
Long Pond <sup>1</sup> . . . .	Blandford . . . .	84.0	{ 14.8 <sup>2</sup> 13.6 <sup>3</sup> }	32.4

<sup>1</sup> Two natural ponds flooded to form this pond.

<sup>2</sup> North.

<sup>3</sup> South.

The following ponds were found in their present condition to have been raised to a greater level than the original pond by building dams at their outlets in order to store water or the creating of waterpower: Greenwater Pond, Becket; Long Pond or Upper Goose Pond, Lee and Tyringham; Goose Pond, Lee and Tyringham; Long Pond, Blandford.

In addition an examination was made of Cranberry Meadow Pond in Spencer and Charlton, which showed this body of water to be wholly an artificial pond.

Amount expended during the year, \$2,415.81.

Total expenditure to Dec. 1, 1922, \$4,915.80.

#### CONSERVING AND EQUALIZING THE FLOW OF WATER IN RIVERS AND STREAMS.

By chapter 87 of the Resolves of 1918 a special commission on the water resources of the Commonwealth of Massachusetts was created, including in its membership the chairman of the Commission on Waterways and Public Lands, to investigate the water resources of the Commonwealth, and the report of the special commission was printed as Senate Document No. 298 of 1919.

By chapter 359, Acts of 1909, chapter 564, Acts of 1912, and chapter 84, Resolves of 1917, co-operation was established between the Commonwealth and the Water Resources Branch of the United States Geological Survey, whereby data relating to the gauging of streams within the Commonwealth and other work of a similar character carried on by the said survey have been obtained for use by the Division, said data being available for other departments of the Commonwealth.

Toward the cost of this work the Commonwealth has paid during the year \$2,999.70.

#### STATE BOUNDARY LINES.

During the perambulation in 1920 of the boundary lines of the Commonwealth seven bounds on the New York line were found insecurely set. In September, 1922, six of these bounds were reset in concrete and one reset in a good quality of gravel. All the bounds on this line are now in good condition.



At this time also the brush and growth along the line from Mount Prospect to the Seventh Mile Post was cut so that the line could be easily found.

During the year request was received from the selectmen of Munroe, Mass., and Readsboro, Vt., to change the position of a bound on the Massachusetts-Vermont line from the easterly side of the Old Tower Road to a new road recently built to replace the older one. This involved moving the bound a distance of 395 feet.

The equipment for taking up this bound, transporting and resetting it was provided by the two towns. Under the direction of a representative of the Department the bound was reset in a substantial manner on the easterly side of the new road.

#### PROVINCE LANDS.

The territory belonging to the Commonwealth known as the Province Lands at Provincetown comprises about 3,390 acres lying northerly and westerly of a line described in chapter 470 of the Acts of 1893. By the terms of this act the Board of Harbor and Land Commissioners was given general care and supervision of this area.

Reclamation work has been carried on under the direction of a superintendent since 1894. To check the movement of the sand the barren dunes are first covered with brush or planted with beach grass. The grass is pulled in bunches about 2 inches thick and transplanted in rows about 4 feet apart and 6 inches deep. This transplanted grass lives between four and five years. This work is followed and reinforced by the transplanting of trees and shrubs.

During the year work on these lands has been continued in accordance with these methods. Thirty-five acres of sand dunes have been covered with brush, and 8 acres of bayberry transplanted. In addition, 50,000 Scotch pines and 27,000 pines on the sod have been transplanted.

The sum of \$180.70 has been paid into the State treasury during the year from licenses issued for cultivating and picking cranberries on the bogs and for mowing meadowlands.

Amount expended during the year, \$4,175.12.

Total expenditure to Dec. 1, 1922, \$93,303.68.



## MASSACHUSETTS ATLAS SHEETS AND TOWN BOUNDARY ATLASES.

Under authority of chapter 57, Resolves of 1890, chapter 42, Resolves of 1891, chapter 360, Acts of 1900, and chapter 69, Resolves of 1915, 4,904 atlas sheets of the map of the Commonwealth and 10 town boundary atlases have been sold during the year ending Nov. 30, 1922, for which \$732.55 was received and forwarded to the Treasurer and Receiver-General.

No atlases were delivered during the year under the authority of chapter 360, Acts of 1900, as amended by chapter 484, Acts of 1909.

## RE-ESTABLISHMENT OF CERTAIN TRIANGULATION STATIONS.

By section 33 of chapter 91 of the General Laws the Division is authorized to make such surveys and do such other work as may be required by any order of the Land Court to re-establish and permanently mark triangulation points and stations previously established in connection with the topographical survey of the Commonwealth and the town boundary survey, and to obtain the geographical position of such new points and stations as may be required by the court.

During the year the location of the following triangulation stations was determined and permanently marked on the ground, and their geographical positions furnished to the Land Court: 4 stations in Franklin; 6 stations in Sutton; 5 stations in Grafton; 4 stations in Wellesley; 7 stations in Worcester; 7 stations in Wareham.

In addition, the same party determined the position of 31 stations as a basis for surveys for dredging in Essex River and for surveys of great ponds and established certain points to mark the ranges giving the exterior line of the Commonwealth off Nantucket.

## SPECIAL REPORTS TO THE LEGISLATURE.

During the year the Division of Waterways and Public Lands has made the following special reports to the State Legislature:—

*Western Avenue Sea Wall, Gloucester.*—Report made Jan.

13, 1922, under the provisions of chapter 16 of the Resolves of 1921 (House, No. 637 of 1922).

*Dennis-Yarmouth Boundary Line in Tidewater on Nantucket Sound Side.* — Report made January, 1922, under the provisions of chapter 21 of the Resolves of 1921 (House, No. 1227 of 1922).

*Waterway between Taunton River and Massachusetts Bay.* — Report made Jan. 14, 1922, under the provisions of chapter 18 of the Resolves of 1921 (House, No. 1261 of 1922).

#### LICENSES AND PERMITS.

During the year 82 licenses were granted for various work to be done in tidewaters, great ponds, Connecticut River and Merrimack River and 86 permits for miscellaneous purposes. The Division also approved 94 permits granted by cities and towns for the construction and maintenance of fish weirs in tidewaters.

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#### RECOMMENDATIONS OF THE DEPARTMENT FOR LEGISLATION RELATING TO THE DIVISION OF WATERWAYS AND PUBLIC LANDS.

See page 69 of this report.

## APPENDIX.

## RECEIPTS DURING FISCAL YEAR 1922.

*Port of Boston Fund.*

Rent under leases and permits . . . .	\$74,673 41	
Use of Commonwealth Pier No. 5 . . . .	141,943 86	
Use of Commonwealth Pier No. 1 . . . .	6,679 98	
Use of Maverick Street property . . . .	720 00	
Use of Haywards Creek property . . . .	398 50	
Inspection of dumping, Boston Harbor . .	4,278 67	
Dumping at receiving basins . . . . .	8,354 72	
License charges . . . . .	1,757 75	
Sale of plans . . . . .	58 00	
Pay station receipts . . . . .	171 52	
Sale of land, South Boston . . . . .	25,944 52	
Sale of transformers . . . . .	670 25	
		\$265,651 18

*Waterways Fund.*

Inspection of dumping, outside Boston Harbor	\$1,713 49	
License charges . . . . .	2,876 87	
		4,590 36

*Income, New Bedford Pier.*

Use of State pier, New Bedford . . . . .	14,125 00
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*Income, Division of Waterways and Public Lands.*

Use of Province Lands . . . . .	\$180 70	
Sale of Massachusetts Atlas sheets . . . .	732 55	
Certified copies of documents . . . . .	57 00	
Plans and specifications . . . . .	142 00	
		1,112 25
Interest on bank accounts . . . . .		746 36
		\$286,225 15



## EXPENDITURES FOR DEVELOPMENT AND IMPROVEMENT IN BOSTON HARBOR, 1859-1922, INCLUSIVE.

PAYMENTS.	Boston Harbor.	Com-monwealth Flats at East Boston.	Com-monwealth Flats at South Boston.	Com-monwealth Pier No. 5.	Com-monwealth Pier No. 6.	Dry Dock.	Haywards Creek.	Mystic River.
To Nov. 30, 1921 . . . . .	\$1,654,288 88 <sup>1</sup>	\$2,093,029 19	\$5,462,210 65	\$4,063,187 49	\$1,067,598 90	\$3,162,401 15	\$385,684 88	\$399,058 78
<b>1922.</b>								
Aircraft landing field . . . . .	-	14,578 02	-	-	-	-	-	-
Street and pier development . . . . .	-	1,531 25	101,645 67	-	20,706 89	-	-	-
Railroad tracks and roadways, South Boston .	-	-	2,871 14	-	-	-	-	-
Dredging and filling . . . . .	415 00	415,175 65	546 52	-	-	-	-	-
Extension of East Boston bulkhead . . . . .	-	52,230 48	-	-	-	-	-	-
Railroad tracks, East Boston . . . . .	-	105,325 62	-	-	-	-	-	-
Completing dry dock . . . . .	-	-	-	-	-	2,250 00	-	-
Boston Harbor, minor channels . . . . .	17,873 71	-	-	-	-	-	-	10,970 48 <sup>2</sup>
Chapter 129, Acts of 1922 . . . . .	-	-	-	-	-	-	-	-
	\$1,672,577 59	\$2,681,870 21	\$5,546,567 09	\$4,063,187 49	\$1,088,305 79	\$3,164,651 15	\$385,684 88	\$410,029 26

<sup>1</sup> Contribution by Quincy Market Cold Storage and Warehouse Corporation, \$4,000.<sup>2</sup> Contribution by Merrimac Chemical Company, \$4,182.50.

EXPENDITURES FOR DEVELOPMENT AND IMPROVEMENT IN BOSTON HARBOR, 1859-1922, INCLUSIVE — *Concluded.*

PAYMENTS.				Malden. River.	Chelsea Creek.	Commercial Point, Dorchester Bay.	Com- monwealth Pier No. 1, East Boston.	Com- monwealth Pier No. 5, Operation and Maintenance.	Com- monwealth Pier No. 1, Maintenance.	Maintenance of Other Property of Common- wealth.
To Nov. 30, 1921	.	.	.	\$31,000 00 <sup>1</sup>	\$60,305 86	\$53,213 10	\$1,191,274 26	\$338,309 97	\$32,234 63	\$255,861 64
1922.										
Aircraft landing field	.	.	.	-	-	-	-	-	-	-
Street and pier development	.	.	.	-	-	-	-	-	-	-
Railroad tracks and roadways, South Boston	.	.	.	-	-	-	-	-	-	-
Dredging and filling	.	.	.	-	-	-	-	-	-	-
Extension of East Boston bulkhead	.	.	.	-	-	-	-	-	-	-
Railroad tracks, East Boston	.	.	.	-	-	-	-	-	-	-
Completing dry dock	.	.	.	-	-	-	-	-	-	-
Boston Harbor, minor channels	.	.	.	1,268 70 <sup>2</sup>	34 87	-	-	-	-	-
Chapter 129, Acts of 1922	.	.	.	-	-	-	-	102,340 55	8,147 26	41,943 35
Grand total,				\$32,268 70	\$60,340 73	\$53,213 10	\$1,191,274 26	\$440,650 52	\$40,381 89	\$297,804 99

Grand total, \$21,128,807.65.

<sup>1</sup> Expended by United States government.<sup>2</sup> Contribution by Standard Oil Company of New York, \$600.

APPROPRIATIONS, CONTRIBUTIONS AND EXPENDITURES FOR IMPROVEMENT OF SMALL HARBORS AND CHANNELS WITHIN BOSTON HARBOR, UNDER THE DIRECTION OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS AND PUBLIC LANDS, AND ITS PREDECESSORS, FROM 1893 TO 1922, INCLUSIVE.

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Cottage Park Channel, Winthrop.	Dredging . . .	\$21,033 42	\$1,000 00	\$22,012 08
Dorchester, easterly shore, Boston.	Dredging . . .	84,472 82	500 00	84,780 47
Harbor View, Boston . . .	Dredging . . .	10,146 00	—	146 00
Hingham Harbor . . .	Dredging . . .	31,556 27	6,500 00	38,056 27
Houghs Neck Channel, Quincy	Dredging . . .	26,989 58	3,500 00	28,489 58
Island End River, Everett .	Survey . . .	264 10	—	264 10
Jeffries Point Channel . .	Dredging . . .	12,961 90	—	2,961 90
Mystic River (near Lawrence and Wiggin's Wharf).	Dredging . . .	5,927 70	—	5,927 70
Neponset River . . .	Dredging . . .	45,014 48	—	45,113 34
Old Harbor Cove . . .	Dredging . . .	9,821 69	—	9,821 69
Orient Heights Channels . .	Dredging . . .	45,679 15	—	45,323 67
Pleasant Park Yacht Club Channel.	Dredging . . .	3,154 92	—	3,154 92
Point Shirley . . .	Dredging . . .	3,713 37	—	3,713 37
Shirley Gut, Boston and Winthrop.	Dredging . . .	1,906 20	—	1,906 20
South Boston, southerly shore	Dredging . . .	129,542 12	—	129,542 08
Stony Beach, Hull . . .	Sea wall . . .	11,794 85	—	11,522 02
Weir River, Hull . . .	Dredging . . .	105,963 51	25,000 00	130,963 51
Wessagussett Channel . .	Dredging . . .	815 20	—	815 20
Weymouth Fore River . .	Dredging . . .	47,194 37	—	32,269 88
Winthrop Harbor Channels .	Dredging . . .	41,038 16	700 00	39,783 58
Wollaston Channel . . .	Dredging . . .	47,656 14	3,000 00	50,234 75
		\$686,645 95	\$40,200 00	\$686,802 31

CONTRIBUTIONS AND EXPENDITURES FOR RIVER AND HARBOR WORK FROM DEC. 1, 1921, TO NOV. 30, 1922, UNDER CHAPTER 481, ACTS OF 1909, AND CHAPTER 91 OF THE GENERAL LAWS.

LOCATION.	Character of Work.	Contributions.	Expenditures.
Annisquam River . . . .	Dredging . . . .	—	\$7,421 80
Brant Rock, Marshfield . . .	Riprap . . . .	—	698 15
Cohasset Harbor . . . .	Survey . . . .	—	119 59
Duxbury Bay . . . .	Survey . . . .	—	171 96



CONTRIBUTIONS, ETC. — *Concluded.*

LOCATION.	Character of Work.	Contributions.	Expenditures.
Ellisville Harbor . . . . .	Breakwater . . . . .	—	\$723 57
Essex River . . . . .	Dredging . . . . .	—	33,428 33
Falmouth Inner Harbor . . . . .	Dredging . . . . .	—	8,434 77
Glades, North Scituate . . . . .	Sea wall . . . . .	—	11,676 77
Gloucester Harbor . . . . .	Rock excavation and sea wall	\$3,300 00	12,563 32
Great ponds . . . . .	Survey . . . . .	—	2,415 81
Herring River . . . . .	Dredging and riprap . . . . .	—	6,823 28
Humarock Beach, Scituate . . . . .	Sea wall . . . . .	18,981 01	—
Hyannisport . . . . .	Removing boulders and dredging.	—	5,334 65
Improvement of rivers and harbors . . . . .	General expenses . . . . .	—	2,355 13
Lobster Cove, Gloucester . . . . .	Survey . . . . .	—	541 90
Lake Anthony, Oak Bluffs . . . . .	Dredging . . . . .	3,000 00	13,044 54
Mattapoisett Harbor . . . . .	Survey . . . . .	—	255 48
Megansett Harbor . . . . .	Dredging . . . . .	5,380 00	18,389 89
Menamsha Inlet . . . . .	Dredging . . . . .	—	11,827 35
New Bedford Harbor . . . . .	Dredging . . . . .	—	17,446 81
Nobscusset Harbor, Dennis . . . . .	Strengthening jetty and dredging.	—	9,321 73
Oak Bluffs . . . . .	Riprap protection . . . . .	—	5,365 78
Saugus River . . . . .	Dredging . . . . .	—	34,989 18
Scituate sea walls . . . . .	Shore protection . . . . .	27,938 57	22,369 18
Taunton River . . . . .	Dredging . . . . .	12,500 00	24,061 78
Wareham . . . . .	Survey . . . . .	—	218 66
Warrens Cove, Plymouth . . . . .	Sea wall . . . . .	—	280 77
West Bay, Osterville . . . . .	Riprap . . . . .	—	202 76
West Harwich . . . . .	Jetty . . . . .	3,000 00	31 25
Wild Harbor . . . . .	Jetty extension . . . . .	—	2,884 54
Witchmere Harbor . . . . .	Jetty and dredging . . . . .	—	2,710 83
		\$74,099 58	\$256,109 56

APPROPRIATIONS, CONTRIBUTIONS AND EXPENDITURES FROM 1893 TO 1922, INCLUSIVE, FOR RIVER AND HARBOR WORK, UNDER THE DIRECTION OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS AND PUBLIC LANDS, AND ITS PREDECESSORS (EXCEPTING BOSTON HARBOR).

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Acushnet River . . .	Inspection and dredging.	\$118,764 85	—	\$118,764 85
Allens Harbor, Harwich . .	Surveys . . .	302 00	—	302 00
Allens Pond, Dartmouth . .	Survey . . .	195 95	—	195 95
Annisquam River, Gloucester .	Dredging, removing ledges and riprap.	116,834 67	—	116,464 79
Apponagansett Harbor and River, Dartmouth.	Survey, dredging and stone breakwater.	56,159 59	—	55,786 05
Barnstable Harbor . . .	Survey and dredging	17,392 18	\$1,500 00	18,554 64
Bass River, Beverly . . .	Dredging . . .	25,539 81	55,535 75	81,075 56
Bass River, Dennis and Yarmouth.	Jetties, dredging and survey.	88,089 74	2,500 00	89,104 74
Brant Rock, Marshfield . .	Sea wall . . .	5,401 96	—	5,401 96
Bucks Creek, Chatham . . .	Jetties, survey and dredging.	29,739 06	1,500 00	31,067 74
Buzzards Bay, Falmouth . .	Survey . . .	166 11	—	166 11
Cataumet Harbor <sup>1</sup> . . .	— —	—	—	—
Centerville River, Barnstable .	Dredging . . .	6,103 22	1,500 00	7,603 22
Cohasset Harbor, Cohasset and Scituate.	Breakwater and dredging.	36,292 14	20,691 88	56,984 02
Concord River, Billerica . .	Removing boulders .	1,514 59	150 00	1,664 59
Connecticut River . . .	Investigation of navigation and surveys.	10,637 04	—	6,970 99
Connecticut River . . .	Improvement . . .	103 63	—	103 63
Connecticut River, Agawam .	Protective work .	20,396 09	—	18,814 42
Connecticut River, Chicopee .	Survey, wall and riprap.	25,149 02	640 00	25,789 02
Connecticut River, Hadley .	Protective work and diversion wall.	100,443 65	500 00	97,740 94 <sup>2</sup>
Connecticut River, Hatfield .	Dikes and riprap. .	14,751 82	1,000 00	14,952 57
Connecticut River, Holyoke .	Marking and lighting old piers.	766 36	—	766 36
Connecticut River, Holyoke .	Dredging and protective work.	18,815 78	415 00	4,230 78
Connecticut River, Northampton.	Protective work .	1,525 80	—	1,524 20
Connecticut River, South Hadley.	Wall . . .	6,406 36	1,000 00	7,379 58
Connecticut River, West Springfield.	Protective work .	12,002 78	—	11,919 27 <sup>3</sup>
Conservation of waters . . .	Investigation . . .	43,999 96	—	41,765 92
Cotuit Harbor, Barnstable .	Dredging and survey	60,248 02	2,000 00	59,219 91
Cuttyhunk Harbor, Gosnold .	Jetties and dredging .	61,828 25	9,000 00	70,754 18
Deacons Pond Harbor, Falmouth. <sup>4</sup>	— —	—	—	—
Duxbury Bay and Harbor . .	Dredging . . .	27,970 75	—	27,970 75

<sup>1</sup> See Megansett Harbor.<sup>3</sup> From 1891, inclusive.<sup>2</sup> From 1888, inclusive.<sup>4</sup> See Falmouth Inner Harbor.

APPROPRIATIONS, ETC. — *Continued.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
East Bay, Osterville . . .	Jetties, dredging and removing scows.	\$61,258 79	\$10,000 00	\$70,924 23
Edgartown Harbor . . .	Survey . . .	2,526 62	300 00	2,826 62
Ellisville Harbor . . .	Dredging . . .	16,793 40	—	16,793 40
Essex County beaches . . .	Survey . . .	1,000 00	—	1,000 00
Essex River . . .	Dredging . . .	38,428 33	—	38,428 33 <sup>1</sup>
Fall River Harbor . . .	Improvement . . .	350,290 54	—	1,130 18
Falmouth Heights, Falmouth .	Sea wall . . .	37,566 83	13,000 00	50,566 83
Falmouth Inner Harbor . . .	Dredging, jetties and wall.	94,536 17	14,000 00	108,536 17
Gloucester Harbor, Gloucester	Dredging and removing ledges.	107,637 06	10,800 00	118,437 06
Gloucester, Western Ave., .	Sea wall, . . .	3,371 00	—	3,371 00
Great ponds . . .	Survey . . .	5,000 00	—	4,915 80
Green Harbor, Marshfield . .	Jetties, dredging and survey.	90,804 54	—	76,466 85
Gun Rock Point, Hull . . .	Breakwater . . .	48,096 11	10,000 00	58,096 11
Harbor Cove, Gloucester . . .	Survey and dredging	18,528 73	866 00	19,394 73
Herring Creek, Scituate . . .	Survey . . .	253 76	—	253 76
Herring River, Harwich . . .	Jetties and dredging .	55,136 46	2,500 00	56,992 16
Herring River, Wellfleet . . .	Dikes and ditches .	11,832 74	10,000 00	21,800 73
Housatonic River, Sheffield . .	Survey . . .	2,011 29	—	2,011 29
Hull . . .	Sea wall and survey .	25,258 32	8,882 06	34,140 38
Humarock Beach, Scituate . .	Survey . . .	37,639 19	37,816 38	56,960 63
Hyannisport, Barnstable . . .	Survey and breakwater.	62,517 76	2,500 00	65,017 76
Improvement of rivers and harbors.	General expenses .	17,423 65	—	17,423 65
Ipswich River, Ipswich . . .	Jetty, wall, riprap and dredging.	47,325 48	1,000 00	48,318 92
Kings Beach, Swampscott . . .	Removal of obstruction.	166 41	—	166 41
Lake Anthony, Oak Bluffs . . .	Jetties and dredging .	73,740 28	5,000 00	75,531 24
Lake Quannapowitt, Wakefield	Investigation . . .	1,004 21	—	345 32
Lewis Bay, Barnstable . . .	Survey and dredging	29,211 64	—	28,963 21
Little Harbor, Marblehead . .	Dredging . . .	8,666 16	2,500 00	11,166 16
Little River, Gloucester . . .	Survey . . .	862 93	—	862 93
Lobster Cove, Gloucester . . .	Dredging . . .	33,589 16	1,500 00	35,089 16
Lynn Harbor, anchorage basin	Survey and dredging	121,789 29	5,200 00	121,588 07
Lynn Harbor and Saugus River	Dredging and filling .	125,931 53	37,500 00	163,431 53
Manchester Harbor . . .	Survey, jetties and dredging.	68,100 67	43,500 00	109,078 51
Mattapoisett . . .	Survey . . .	255 48	—	255 48
Megansett Harbor . . .	Dredging . . .	39,530 57	12,730 00	52,116 66

<sup>1</sup> \$5,000 expended by the United States government.



APPROPRIATIONS, ETC. — *Continued.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Menamsha Inlet, Chilmark and Gay Head.	Jetties, dredging and sea wall.	\$77,443 15	\$700 00	\$78,039 50
Merrimack River . . .	Investigation and survey.	1,308 50	—	1,208 50
Mill River, Gloucester . .	Survey and dredging	24,632 86	300 00	24,899 59
Mitchells River, Chatham .	Survey . . .	322 96	—	322 96
Nantucket Harbor . . .	Dredging . . .	42,058 63	1,000 00	42,779 78
New Bedford Harbor . . .	Dredging . . .	18,856 57	—	18,856 57
New Bedford Harbor . . .	Pier, shed and dredging.	371,899 77	13,446 74 <sup>1</sup>	335,346 51
New Bedford State Pier . .	Improvement of .	73,461 00	—	73,436 38
New Bedford State Pier . .	Operation and maintenance.	59,274 33	—	49,659 09
Newburyport Harbor . . .	Survey . . .	115 97	—	115 97
Nobscusset Harbor, Dennis .	Breakwater, dredging and riprap.	46,515 89	1,200 00	38,355 34
North River, Marshfield . .	Surveys and removing rocks.	6,858 75	1,800 00	8,658 75
North River, Salem . . .	Survey . . .	704 52	—	704 52
Oak Bluffs . . . . .	Removing rocks .	632 45	—	594 95
Oak Bluffs . . . . .	Sea wall . . .	34,074 25	2,500 00	36,574 25
Onset Bay, Wareham . . .	Survey and dredging	14,295 89	1,000 00	15,295 89
Orleans . . . . .	Survey . . .	104 18	—	104 18
Pamet River, Truro . . .	Survey, dredging and repairing jetties.	191,259 95	1,200 00	192,459 95
Paskamansett River, Dartmouth.	Dredging and jetty .	5,227 68	—	5,227 68
Penikese Island, Gosnold . .	Pile wharf and survey	5,300 00	—	5,192 95
Plum Island River, Newbury and Newburyport.	Survey . . .	983 31	—	983 31
Plymouth Harbor . . .	Dredging . . .	178,413 59	71,794 55	223,705 87 <sup>2</sup>
Popponnesett Bay . . .	Dredging . . .	46,252 33	—	46,252 33
Powow River . . . . .	Dredging channel and riprapping wall.	502 94	—	502 94
Province Lands, Provincetown	Reclamation . .	97,000 00	—	93,303 68
Provincetown Harbor . . .	Survey . . .	1,217 78	—	1,217 78
Quansett Harbor, Orleans . .	Survey . . .	195 88	—	194 50
Quicks Hole, Gosnold . . .	Survey . . .	500 00	—	—
Red Brook Harbor, Bourne . .	Removing pier . .	275 00	—	275 00
Revere . . . . .	Stone breakwater .	60,407 09	—	60,397 93
Rock Harbor, Orleans . . .	Dredging . . .	12,108 25	400 00	12,492 71
Rockport Harbor . . .	Dredging and removing rocks.	14,429 32	—	13,749 02
Salem Harbor . . . . .	Survey . . .	3,050 05	—	1,050 05
Salt Pond River, Eastham . .	Survey . . .	210 11	—	210 11
Salters Point, Dartmouth . .	Breakwater . . .	13,509 59	1,500 00	15,009 59

<sup>1</sup> Paid by surety company.<sup>2</sup> \$57,000 expended under direction of the United States government.

APPROPRIATIONS, ETC. — *Concluded.*

LOCALITY.	Character of Work.	Total Appropriation.	Contributions by Municipality or Others.	Total Expenditure.
Sandwich Harbor . . . .	Dredging channel, riprap and jetties.	\$80,579 84	-	\$80,579 84
Saugus River, Lynn and Saugus	Survey and dredging	54,195 82	\$2,000 00	55,834 35
Scituate . . . . .	Shore protection .	83,707 00	42,986 94	132,001 64
Scituate harbor . . . .	Dredging . . . .	96,676 92	8,300 00	104,976 92
Scorton Harbor, Sandwich .	Jetty and dredging .	19,426 39	500 00	17,774 34
Sesuit Harbor, Dennis . .	Jetty . . . . .	28,067 85	1,500 00	24,555 10
Sippican Harbor, Marion .	Survey . . . . .	7 17	-	7 17
Smith's Cove, Gloucester .	Survey and dredging	5,163 07	-	5,163 02
South River, Salem . . .	Dredging . . . .	10,523 65	3,000 00	13,462 66
South Watuppa Pond, Fall River.	Fenders and excavation.	203 42	-	203 42
Stage Harbor, Chatham . .	Dikes and survey .	10,803 01	-	10,803 01
Taunton River . . . . .	Survey and dredging	19,769 66	12,500 00	28,697 18
Taunton-Brockton waterway .	Investigation . .	5,388 46	-	5,278 18
Taunton River-Boston Harbor Canal.	Survey . . . . .	10,000 00	-	9,932 75
Taunton River-Massachusetts Bay Canal.	Survey . . . . .	11,786 71	-	11,786 71
Vineyard Haven Harbor . .	Repairing sea wall .	9,564 51	2,380 50	11,945 01
Vineyard Haven Harbor, Tisbury.	Breakwater and dredging.	45,089 48	1,000 00	45,518 25
Waquoit Bay, Falmouth . .	Breakwater wall and bulkhead.	29,583 79	2,000 00	31,285 40
Wareham River . . . . .	Survey and dredging	37,567 93	5,000 00	42,567 93
Warrens Cove, Plymouth .	Sea wall . . . .	14,749 74	9,713 98	24,761 99
Watch Hill, Chatham . . .	Survey and riprap .	15,020 47	-	14,968 75
Wellfleet Harbor . . . .	Survey and dredging	16,867 22	1,500 00	17,600 29
West Bay, Barnstable and Osterville.	Jetties and dredging .	78,457 73	10,000 00	88,420 36
West Falmouth Harbor, Falmouth.	Dredging . . . .	25,655 31	-	24,386 18
West Harwich . . . . .	Survey . . . . .	40 25	3,000 00	40 25
Westfield River . . . . .	Survey and jetties .	6,296 90	-	6,037 29
Wild Harbor, Falmouth . .	Jetty and dredging .	36,194 58	5,000 00	36,137 71
Winthrop shore . . . . .	Sea walls and protective work.	17,058 48	3,000 00	20,058 48
Witchmere Harbor, Harwich .	Jetties and dredging .	37,147 70	1,000 00	38,005 00
Woods Hole, Great Harbor, Falmouth.	Dredging . . . .	5,468 86	1,500 00	6,968 86
Wrecks . . . . .	Removal from tide-water.	67,645 65	-	8,834 07
Yarmouthport Harbor . . .	Survey . . . . .	83,977 37	7,000 00	90,977 37
		\$4,876,724 58	\$547,249 78	\$4,974,443 18

## FEDERAL APPROPRIATIONS AND EXPENDITURES.

Federal appropriations and expenditures for improvement of rivers and harbors in Massachusetts from the establishment of the government to the close of the fiscal year ending June 30, 1922, as shown in the following tables, furnished by the Chief of Engineers, U. S. A.: —

TABLE No. 1. — *Localities at Present under Improvement.*

[Compiled from the annual report of the Chief of Engineers, U. S. A., for the fiscal year ending June 30, 1922.]

LOCALITY.	Expenditures.	Appropriations.
Newburyport Harbor . . . . .	\$495,900 00	\$495,900 00
Merrimack River . . . . .	404,401 95	414,466 72 <sup>1</sup>
Sandy Bay, Cape Ann, harbor of refuge . . . . .	1,941,478 00	1,941,478 00 <sup>2</sup>
Gloucester Harbor . . . . .	538,183 00	538,183 00 <sup>3</sup>
Beverly Harbor . . . . .	49,125 00	110,625 00
Salem Harbor . . . . .	71,368 66	71,368 66 <sup>4</sup>
Lynn Harbor . . . . .	471,099 95	471,637 00 <sup>5</sup>
Mystic River (upper portion) . . . . .	305,811 92	336,050 00 <sup>6</sup>
Mystic River (below mouth of Island End River) . . . . .		
Malden River . . . . .	149,950 00	149,950 00
Boston Harbor . . . . .	12,623,302 63	12,669,827 58 <sup>7</sup>
Dorchester Bay and Neponset River . . . . .	95,008 00	95,008 00
Weymouth Fore River . . . . .	533,557 55	573,750 00
Weymouth Back River . . . . .	26,500 00	27,000 00
Plymouth Harbor . . . . .	364,032 75	366,459 80 <sup>8</sup>
Provincetown Harbor . . . . .	348,062 72	348,162 97
Pollock Rip Shoals, Nantucket Sound . . . . .	810,425 17	980,000 00
Nantucket Harbor of Refuge . . . . .	576,361 88	591,473 50
New Bedford and Fairhaven harbors . . . . .	769,610 00	769,610 00
Taunton River . . . . .	203,806 94	210,189 18
Fall River Harbor . . . . .	408,656 19	412,411 49
Totals . . . . .	\$21,186,642 31	\$21,573,550 90

<sup>1</sup> Of original amount appropriated, \$900 was carried to the surplus fund of the treasury from previous project.

<sup>2</sup> Balance (\$8,522) transferred elsewhere under public resolution of May 2, 1922.

<sup>3</sup> Deduction on account of \$3,900 carried to the surplus fund of the treasury.

<sup>4</sup> Of original amount appropriated, \$1,131.34 was carried to the surplus fund of the treasury.

<sup>5</sup> Deduction on account of \$5,200 carried to the surplus fund of the treasury.

<sup>6</sup> Now consolidated as one improvement.

<sup>7</sup> Including Chelsea Creek, \$46,000 transferred by authority of public resolution No. 58, June 10, 1922.

<sup>8</sup> In addition, \$57,400 was expended from contributed funds.



TABLE NO. 2. — *Localities in which Work is not now in Progress.*

[Compiled from data furnished by the United States Treasury Department and the Chief of Engineers, U. S. A.]

LOCALITY.	Expenditures.	Appropriations.
Bass River . . . . .	\$20,150 34	\$20,150 41
Buzzards Bay Harbor . . . . .	2,500 00	2,500 00
Canapitset Channel . . . . .	5,312 54	9,800 00
Chatham Harbor . . . . .	12,171 36	13,732 79
Cohasset Harbor . . . . .	10,000 00	10,000 00
Duxbury Harbor . . . . .	37,000 00	37,000 00
East Dennis Breakwater . . . . .	7 57	1,500 00
Edgartown Harbor . . . . .	25,000 00	25,000 00
Essex River . . . . .	30,000 00	30,000 00
Hingham Harbor . . . . .	38,316 58	39,000 00
Hyannis Harbor . . . . .	221,787 75	221,267 07
Ipswich River . . . . .	5,617 91	7,500 00
Kingston Harbor . . . . .	8,940 09	10,000 00
Little Harbor, Woods Hole . . . . .	18,000 00	18,000 00
Manchester Harbor . . . . .	23,985 57	24,300 00
Marblehead Harbor . . . . .	833 42	1,900 00
Marthas Vineyard Harbor . . . . .	7,000 00	7,000 00
Powow River . . . . .	50,940 72	51,000 00
Rockport Harbor . . . . .	91,229 25	91,232 57
Scituate Harbor . . . . .	104,590 98	104,680 00
Town River . . . . .	37,577 41	37,577 41
Vineyard Haven Harbor . . . . .	55,387 35	60,000 00
Wareham Harbor . . . . .	95,997 30	96,236 00
Wellfleet Harbor . . . . .	11,365 57	16,000 00
Westport Harbor and River . . . . .	3,000 00	3,000 00
Winthrop Harbor . . . . .	9,000 00	9,000 00
Woods Hole Channel . . . . .	343,599 92	344,000 00
Totals . . . . .	\$1,269,311 63	\$1,291,376 25

RECAPITULATION.	Expenditures.	Appropriations.
Total of Table No. 1 . . . . .	\$21,186,642 31	\$21,573,550 90
Total of Table No. 2 . . . . .	1,269,311 63	1,291,376 25
Grand totals . . . . .	\$22,455,953 94	\$22,864,927 15

EXPENDITURES ON BOSTON HARBOR AND ITS TRIBUTARIES TO JUNE 30,  
1922.

[The tributaries given are those now under improvement, and do not include tributaries heretofore improved.]

LOCALITY.	Expenditures.	Appropriations.
Boston Harbor proper <sup>1</sup> . . . . .	\$12,623,302 63	\$12,669,827 58
Mystic River (below mouth of Island End River) <sup>2</sup> . . . . .	305,811 92	336,050 00
Mystic River (upper portion) <sup>2</sup> . . . . .		
Malden River . . . . .	149,891 55	149,950 00
Totals . . . . .	\$13,079,006 10	\$13,155,827 58

<sup>1</sup> Including Chelsea Creek.<sup>2</sup> Now one improvement.

CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION  
ENDING

Contract No.	WORK.	Contractor.	Date.
22	North Scituate, sea wall . . . .	Arthur J. Mitchell . . . .	Sept. 14, 1921
24	East Boston, dredging and filling .	Atlantic, Gulf and Pacific Company.	May 11, 1921
26	Witchmere Harbor, dredging . . . Oak Bluffs, riprap . . . . Menamsha, jetty repairs and resetting light. Menamsha, dredging . . . . Falmouth Inner Harbor, riprap . . Wild Harbor, Falmouth, dredging channel. Herring River, dredging channel . Hyannisport, dredging . . . . Hyannisport, removing boulders . Lake Anthony, dredging . . . . West Bay, Barnstable, riprap . . Herring River, riprap . . . .	William E. Burke . . . .	May 13, 1921
38	Bullock Street Extension and Cypher Street, paving.	B. E. Grant Company . . . .	Aug. 30, 1921
39	East Boston bulkhead . . . .	William L. Miller Company . .	Sept. 14, 1921
40	Taunton River, dredging . . . .	Bay State Dredging and Contracting Company.	Nov. 3, 1921
41	Oak Bluffs sea wall and Witchmere Harbor jetty, riprap protection.	T. A. Scott Company, Inc. . .	Nov. 18, 1921
43	Viaduct, stairs from Northern avenue.	George M. Bryne . . . .	Jan. 3, 1922
44	Third Cliff, Scituate, riprap . . .	W. H. Connor & Son Company	Feb. 10, 1922
45	New Bedford, dredging opposite State pier.	Bay State Dredging and Contracting Company.	March 14, 1922
46	B Street Extension, paving private way to Northern Avenue.	B. E. Grant Company . . . .	May 1, 1922
47	Beach Street, North Scituate, sea wall.	John Williams & Co. . . .	May 1, 1922



OF WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE YEAR  
Nov. 30, 1922.

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1922.	Total paid to Nov. 30, 1922.	Estimated Amount of Contract.
Completed May 6, 1922.	For constructing new wall, \$11 per cubic yard of concrete measured in completed work. For constructing concrete footings under existing wall, \$4 for each linear foot of completed footing. For excavating, placing and grading of material, \$1 per cubic yard of material measured in place before excavating.	\$10,686 06	\$16,526 77	\$16,526 77
Completed Oct. 28, 1922.	Dredging areas at East Boston and depositing material, 32.94 cents per cubic yard. Dredging and depositing material brought from other portions of harbor, 22 cents per cubic yard.	410,804 70	632,478 95	-
		746 74	4,942 26	4,942 26
		1,154 33	7,455 56	7,455 56
		1,426 22	1,426 22	1,435 00
		10,819 20	10,819 20	10,819 20
		82 50	550 00	550 00
Completed	Unit prices . . . . .	971 86	6,442 05	6,975 00
		1,336 89	8,876 61	8,876 61
		2,399 08	9,164 47	9,164 47
		2,250 00	2,250 00	2,250 00
		11,787 25	11,787 25	11,787 25
		3,938 15	6,477 72	6,477 72
		5,168 46	5,168 46	5,168 46
Completed Dec. 31, 1921.	Unit prices . . . . .	36,086 90	61,055 65	-
Completed Dec. 16, 1921.	\$27.71 for each linear foot of completed bulkhead.	19,898 50	52,649 00	52,649 00
Completed March 8, 1922.	Dredging, 72 cents per cubic yard, scow measurement. Removing boulders, \$22 per cubic yard.	23,342 48	25,854 94	25,854 94
Completed Jan. 19, 1922.	For furnishing and placing stone chips and riprap at Oak Bluffs, \$6.45 per ton.	6,018 49	6,018 49	8,535 00
	For furnishing and placing stone chips at Witchmere Harbor, \$6.95 per ton.	2,193 78	2,193 78	
Completed April 24, 1922.	Lump sum of \$2,736 . . . .	2,736 00	2,736 00	2,736 00
In progress . . .	Unit prices . . . . .	1,002 57	1,002 57	60,000 00
Completed April 14, 1922.	Dredging, 34 cents per cubic yard, measured in scows. Removing boulders, \$20 per cubic yard.	16,748 06	16,748 06	16,748 06
Completed Sept. 22, 1922.	Unit prices . . . . .	33,809 99	33,809 99	33,809 99
Completed Aug. 22, 1922.	For furnishing materials and constructing concrete wall facing and spur jetties, \$10.90 per cubic yard of concrete measured in completed work.	14,600 05	14,600 05	14,600 05

CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION  
ENDING NOV. 30, 1922

Contract No.	WORK.	Contractor.	Date.
48	Sand Hills, Scituate, sea wall .	W. F. Loud & Sons Company .	May 1, 1922
49	Falmouth Inner Harbor, dredging .	William E. Burke . . . .	April 26, 1922
50	Savin Hill, Dorchester, dredging .	Bay State Dredging and Contracting Company.	May 8, 1922
51	Megansett Harbor, Falmouth, dredging.	Gerrish Dredging Company . .	June 13, 1922
52	East Boston, extension of bulkheads	William L. Miller Company .	May 29, 1922
53	East Boston, airplane landing field and approaches.	Vincent N. Bellizia . . . .	Aug. 15, 1922
54	East Boston, steel hangars at aircraft landing field.	Coleman Brothers, Incorporated	Sept. 1, 1922
55	East Boston, Commonwealth railroad.	J. F. Kennedy Company . . .	Aug. 7, 1922
56	Mystic River, dredging below Malden bridge.	W. S. Rendle & Son Company .	July 26, 1922
57	Hingham Harbor, dredging . . .	W. S. Rendle & Son Company .	Aug. 14, 1922
58	Commonwealth Pier No. 5, South Boston, trestle at heating plant.	William L. Miller Company .	Aug. 7, 1922
59	Essex River, dredging . . . .	Bay State Dredging and Contracting Company.	Aug. 7, 1922
60	Saugus River, dredging . . . .	Bay State Dredging and Contracting Company.	Aug. 7, 1922
61	Commonwealth Pier No. 6, South Boston, repaving.	B. E. Grant Company . . .	Aug. 24, 1922
62	Nobscusset Harbor, Dennis, dredging.	William E. Burke . . . .	Aug. 25, 1922

OF WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE YEAR  
— *Continued.*

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1922.	Total paid to Nov. 30, 1922.	Estimated Amount of Contract.
Completed July 12, 1922.	For furnishing materials and constructing the main wall and return wall, \$12.25 per cubic yard of concrete measured in completed work. For furnishing materials and constructing each spur jetty, \$100 for each complete jetty 15 feet in length.	\$4,858 34	\$4,858 34	\$4,858 34
Completed June 9, 1922.	Dredging, 57 cents per cubic yard, scow measurement. Removing boulders, \$15 per cubic yard.	7,794 75	7,794 75	7,794 75
Completed June 20, 1922.	Dredging, 49 cents per cubic yard, scow measurement. Removing boulders, \$18 per cubic yard. Removing and replacing certain piles, \$350.	13,943 58	13,943 58	13,943 58
Completed Sept. 11, 1922.	Dredging, 49 cents per cubic yard. Removing boulders, \$12 per cubic yard.	17,640 00	17,640 00	17,640 00
In progress . . .	For building single bulkhead, \$28 per linear foot of completed bulkhead. For building double bulkhead, \$28.40 per linear foot of completed bulkhead.	31,159 22	31,159 22	45,200 00
In progress . . .	Unit prices . . . . .	13,079 80	13,079 80	35,744 00
In progress . . .	Unit prices . . . . .	1,315 37	1,315 37	9,040 00
In progress . . .	Unit prices . . . . .	5,973 89	5,973 89	19,597 50
Completed Oct. 26, 1922.	Dredging, 33 cents per cubic yard, scow measurement. Removing boulders, \$10 per cubic yard.	9,805 44	9,805 44	10,340 00
Completed Nov. 17, 1922.	Dredging, 32 cents per cubic yard, scow measurement. Removing boulders, \$12 per cubic yard.	19,708 85	19,708 85	22,092 00
Completed Sept. 11, 1922.	Lump sum of \$2,396 . . . . .	2,396 00	2,396 00	2,396 00
In progress . . .	Dredging, 54 cents per cubic yard, scow measurement. Removing boulders, \$18 per cubic yard.	29,089 12	29,089 12	56,340 00
Completed Oct. 4, 1922.	Dredging, 64 cents per cubic yard, scow measurement. Removing boulders, \$18 per cubic yard.	33,765 50	33,765 50	24,338 00
Completed Oct. 30, 1922.	Unit prices . . . . .	19,959 98	19,959 98	29,262 35
Completed Nov. 4, 1922.	Dredging, 73 cents per cubic yard <i>in situ</i> . Removing boulders, \$16 per cubic yard.	8,066 50	8,066 50	9,000 00



CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION  
ENDING Nov. 30, 1922

Contract No.	WORK.	Contractor.	Date.
63	Gloucester Harbor, rock excavation	George T. Rendle . . . .	Sept. 22, 1922
64	Western Avenue, Gloucester, sea wall.	Bay State Dredging and Contracting Company.	Nov. 10, 1922
65	West Harwich, jetty east of Herring River.	George T. Rendle . . . .	Nov. 8, 1922
66	New Haven docks, dredging . . .	Bay State Dredging and Contracting Company.	Oct. 23, 1922

OF WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE YEAR  
— *Concluded.*

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1922.	Total paid to Nov. 30, 1922.	Estimated Amount of Contract.
In progress .	For removing ledge near Five Pound Island, \$14,993. For removing rocks near Parkhurst's Wharf, \$750. For removing rocks in Harbor Cove near Parmenter-Rice and Atlantic Halibut Company's Wharves, \$750. For removing rock in Harbor Cove near wharf of Gloucester Fresh Fish Company, \$750. For removing three rocks near head of harbor, \$750.	\$4,675 00	\$4,675 00	\$17,993 00
In progress .	Unit prices . . . . .	2,890 00	2,890 00	54,630 25
In progress .	For furnishing and placing stone riprap and chips in jetty and as bank protection, \$5.19.	-	-	11,000 00
In progress .	Dredging, 39.9 cents per cubic yard. Removing boulders, \$16 per cubic yard.	17,349 89	17,349 89	33,900 00

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The Commonwealth of Massachusetts

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ANNUAL REPORT

OF THE

DEPARTMENT OF PUBLIC WORKS

FOR THE

YEAR ENDING NOVEMBER 30, 1923







# The Commonwealth of Massachusetts

## DEPARTMENT OF PUBLIC WORKS.

*To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts.*

Pursuant to the provisions of law the fourth annual report of the Department of Public Works for the fiscal year ending Nov. 30, 1923, is submitted.

The organization of the Department in two divisions is set forth in chapter 16, General Laws.

The personnel during the year ending Nov. 30, 1923, was as follows:—

Commissioner of Public Works, WILLIAM F. WILLIAMS.

### *Division of Highways.*

Associate Commissioner, JAMES W. SYNAN.

Associate Commissioner, FRANK E. LYMAN.

### *Division of Waterways and Public Lands.*

Associate Commissioner, JESSE B. BAXTER.

Associate Commissioner, RICHARD K. HALE.

Executive Secretary for the Department, FREDERICK N. WALES.

### *Division of Highways.*

Chief Engineer, ARTHUR W. DEAN.

Construction Engineer, FRANKLIN C. PILLSBURY.

District Engineers:

District No. 1, Berkshire County, GEORGE A. CURTIS.

District No. 2,<sup>1</sup> Franklin, Hampshire and Hampden counties, H. D. PHILLIPS.

District No. 3,<sup>2</sup> Hampden and Worcester counties, JOHN A. JOHNSTON.

District No. 4, Middlesex County, F. D. SABIN.

District No. 5, Essex and Suffolk counties, D. H. DICKINSON.

District No. 6, Norfolk and Bristol counties, R. W. COBURN.

District No. 7, Plymouth, Barnstable, Dukes and Nantucket counties, GEORGE H. DELANO.

Recording Secretary for the Division, MARY A. RILEY.

Financial Secretary for the Division, FRED FAIR.

### *Division of Waterways and Public Lands.*

Senior Assistant Engineer, for Boston Harbor, JOHN N. FERGUSON.

Senior Assistant Engineer, for harbors and waterways outside Boston Harbor, FRANCIS L. SELLEW.

Recording Secretary for the Division, EDNA F. TOWNSEND.

Financial Secretary for the Division, CORA I. ALLEN.

### *Registry of Motor Vehicles.*

Registrar, FRANK A. GOODWIN.

Chief Clerk, CHARLES R. GILLEY.

Chief of Inspection Force, ALBERT S. OLSSON.

A detailed report is presented herewith, covering the activities for the year of the Division of Highways, the Division of Waterways and Public Lands, and the Registry of Motor Vehicles.

WILLIAM F. WILLIAMS,  
*Commissioner of Public Works.*

DEC. 1, 1923.

<sup>1</sup> With the exception of five towns, which are included in District No. 3.

<sup>2</sup> Including Brimfield, Holland, Monson, Palmer and Wales, those remaining being in District No. 2.

## APPROPRIATIONS.

Chapter 126, Acts of 1923, making appropriations for the maintenance of departments, boards, commissions, institutions and certain activities of the Commonwealth, etc., is, in part, as follows: —

*Claims.*

Payments for certain claims authorized by the following appropriations shall be certified by the comptroller of the commonwealth only upon the filing of satisfactory releases or other evidence that the payments are accepted in full compensation on the part of the commonwealth in respect thereto:

For Berkshire Lumber Company, on account of lumber furnished and used in the construction of forms for concrete bridges in Williamstown, New Ashford and Lanesborough, the sum of thirty-three hundred forty-three dollars and thirty-eight cents .	\$3,343 38
For Taconic Lumber Company, on account of lumber furnished and used in the construction of forms for concrete bridges in Williamstown, New Ashford and Lanesborough, the sum of twenty-one hundred forty-nine dollars and forty cents .	2,149 40
For Stuart H. Morgan, for injuries received in the performance of his duties, the sum of fifty-seven dollars and ninety cents .	57 90
For Martin Morrissey, for injuries received in the performance of his duties, the sum of seven dollars and twenty-five cents .	7 25
For Earle C. Dodds of Hopedale, for reimbursement for damages to an automobile run into by a truck used by the division of highways of the state department of public works, on April twenty-fourth, nineteen hundred and twenty-two, the sum of fourteen hundred dollars .	1,400 00
For Whitcher's garage of the town of Chester, for repair of damage done to car owned by M. W. Terrill by an automobile operated by a state employee, the sum of five dollars and sixty cents .	5 60

*Massachusetts Agricultural College:*

For the improvement of roads, the work to be done under the supervision of the highway division of the department of public works, a sum not exceeding eight thousand dollars .	8,000 00
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*Service of the Department of Public Works.*

For the salaries of the commissioner and the four associate commissioners, a sum not exceeding thirty-one thousand five hundred dollars .	31,500 00
For personal services of clerks and assistants to the commissioner, a sum not exceeding thirteen thousand dollars .	13,000 00
For traveling expenses of the commissioner, a sum not exceeding fifteen hundred dollars .	1,500 00

Division of Highways (the following appropriations for the operation and maintenance of this division, except as otherwise provided, are made from the receipts in the Motor Vehicle Fees Fund):

For the personal services of the chief engineer, engineers and office assistants, including certain clerks and stenographers, a sum not exceeding fifty-one thousand five hundred dollars .	51,500 00
For traveling expenses of the associate commissioners, when traveling in the discharge of their official duties, a sum not exceeding twenty-five hundred dollars .	2,500 00
For services other than personal, including printing the annual report and necessary office supplies and equipment, a sum not exceeding fourteen thousand dollars .	14,000 00
For the care, repair and storage, replacement and purchase of road-building machinery and tools, a sum not exceeding two hundred fifty thousand dollars .	250,000 00



For the suppression of gypsy and brown tail moths on state highways, a sum not exceeding fifteen thousand dollars . . . . .	\$15,000 00
For the construction and repair of town and county ways, a sum not exceeding seven hundred fifty thousand dollars . . . . .	750,000 00
For aiding towns in the repair and improvement of public ways, a sum not exceeding six hundred fifty thousand dollars . . . . .	650,000 00
For the maintenance and repair of state highways, a sum not exceeding two million nine hundred thousand dollars, of which sum three hundred seventy thousand nine hundred thirty-five dollars and sixteen cents represents the receipts from assessments upon certain cities and towns for the maintenance of state highways, and the balance from receipts in the Motor Vehicle Fees Fund . . . . .	2,900,000 00
For the maintenance and operation of the Newburyport bridge and the Brightman street bridge in Fall River and Somerset, in accordance with the provisions of existing laws, a sum not exceeding fifty-eight thousand dollars . . . . .	58,000 00
For the purpose of enabling the department of public works to secure federal aid for the construction of highways, a sum not exceeding one million nine hundred thousand dollars in addition to any other funds which the department has available for the purpose. Of the said sum seven hundred twenty-eight thousand four hundred twenty-three dollars and seventy-one cents represents the receipts from assessments upon counties for the construction and improvements of highways, and the balance from the receipts in the Motor Vehicle Fees Fund, and any unexpended balance remaining at the end of the present fiscal year may be used in the succeeding year for the same purposes . . . . .	1,900,000 00
For the care of snow on highways, as provided by section eleven of chapter eighty-four of the General Laws, a sum not exceeding thirty thousand dollars . . . . .	30,000 00
For administering the law relative to advertising signs near highways, a sum not exceeding thirteen thousand dollars, to be paid from the general fund . . . . .	13,000 00

#### Registration of Motor Vehicles:

For personal services, a sum not exceeding three hundred eighty-seven thousand dollars, from receipts in the Motor Vehicle Fees Fund . . . . .	387,000 00
For services other than personal, including traveling expenses, purchase of necessary supplies, equipment and materials, including cartage and storage of the same, and for work incidental to the registration and licensing of owners of motor vehicles, a sum not exceeding three hundred thirty thousand dollars, from receipts in the Motor Vehicle Fees Fund . . . . .	330,000 00

#### Special Improvement:

For completing the construction of certain highways in the five western counties, as authorized by and subject to the conditions of chapter five hundred and seventy-two of the acts of nineteen hundred and twenty, a sum not exceeding four hundred thousand dollars, from receipts in the Motor Vehicle Fees Fund, and to be in addition to any sum heretofore appropriated for the purpose . . . . .	400,000 00
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#### Division of Waterways and Public Lands:

For personal services of the chief engineer and assistants, a sum not exceeding fifty-two thousand dollars . . . . .	52,000 00
For necessary traveling expenses of the associate commissioners, a sum not exceeding one thousand dollars . . . . .	1,000 00



For services other than personal, including printing and binding the annual report, and for necessary office and engineering supplies and equipment, a sum not exceeding sixty-five hundred dollars	\$6,500 00
For the care and maintenance of the province lands, a sum not exceeding five thousand dollars	5,000 00
For the maintenance of structures, and for repairing damages along the coast line or river banks of the commonwealth, and for the removal of wrecks and other obstructions from tidewaters and great ponds, a sum not exceeding twenty-five thousand dollars	25,000 00
For the improvement, development and protection of rivers and harbors, tidewaters and foreshores within the commonwealth, as authorized by section eleven of chapter ninety-one of the General Laws, and of great ponds, a sum not exceeding two hundred thousand dollars, and any unexpended balance of the appropriation remaining at the end of the current fiscal year may be expended in the succeeding year for the same purposes	200,000 00
For re-establishing and permanently marking certain triangular points and sections, as required by order of the land court in accordance with section thirty-three of chapter ninety-one of the General Laws, a sum not exceeding one thousand dollars	1,000 00
For the supervision and operation of commonwealth pier five, including the salaries or other compensation of employees, and for the repair and replacement of equipment and other property, a sum not exceeding one hundred five thousand dollars, to be paid from the port of Boston receipts	105,000 00
For the maintenance of pier one, at East Boston, a sum not exceeding nine thousand dollars, to be paid from the port of Boston receipts	9,000 00
For the maintenance and improvement of commonwealth property under the control of the division, a sum not exceeding one hundred ten thousand dollars, to be paid from the port of Boston receipts	110,000 00
For the operation and maintenance of the New Bedford state pier, a sum not exceeding three thousand dollars	3,000 00
For the compensation of dumping inspectors, a sum not exceeding two thousand dollars, to be paid from the Waterways Fund	2,000 00
For continuing the work in gauging the flow of water in the streams of the commonwealth, a sum not exceeding three thousand dollars	3,000 00
For supervision and operation of the commonwealth stores, a sum not exceeding ten thousand dollars	10,000 00
Specials:	
For expenses of dredging channels and filling marsh lands, a sum not exceeding two hundred thirty-five thousand dollars, to be paid from the port of Boston receipts, and to be in addition to the amount appropriated in nineteen hundred and twenty-two	235,000 00
For dredging minor channels in Boston harbor, a sum not exceeding fifty thousand dollars, to be paid from the port of Boston receipts, and to be in addition to the amount appropriated in nineteen hundred and twenty-two	50,000 00
For the construction of streets, railroads and piers for the development of land at South Boston and East Boston, a sum not exceeding ten thousand dollars, to be paid from the port of Boston receipts, and the sum of one hundred thirty-one thousand dollars, reappropriated by chapter one hundred and twenty-nine of the acts of nineteen hundred and twenty-two for railroad track connections and certain roadways and piers at South Boston, may be used for similar improvements at East Boston	10,000 00

For certain claims on account of the construction of the dry dock at South Boston, a sum not exceeding five thousand dollars, to be paid from the port of Boston receipts . . . . .	\$5,000 00
For the expense of establishing a reservation in the city of Gloucester, a sum not exceeding five hundred dollars . . . . .	500 00

DEFICIENCIES.

For deficiencies in certain appropriations of previous years, in certain items, as follows:

*Department of Public Works.*

Division of Highways:

For the maintenance and operation of the Newburyport bridge and the Brightman street bridge in Fall River and Somerset, in accordance with the provisions of existing laws, the sum of eighty-one dollars and twenty-five cents . . . . .	81 25
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Chapter 494, Acts of 1923, in addition to the general appropriation act making appropriations to supplement certain items contained therein, and for certain new activities and projects is, in part, as follows:—

*Claims.*

Payments for certain claims authorized by the following appropriations shall be certified by the comptroller of the commonwealth only upon the filing of satisfactory releases or other evidence that the payments are accepted in full compensation on the part of the commonwealth in respect thereto:

For C. Philip Curtis of Sharon, for damages to his automobile as a result of a collision with a motor vehicle operated by an employee of the division of highways of the department of public works, the sum of fifty-eight dollars and twenty-two cents . . . . .	\$58 22
For Alfred R. Goodwin of Worcester, for damages to his automobile as the result of a collision with a motor vehicle operated by an employee of the division of highways of the department of public works, the sum of ninety dollars . . . . .	90 00
For Bryant Bigelow of Boston, for damages to his automobile as the result of a collision with a motor vehicle operated by an employee of the division of highways of the department of public works, the sum of two hundred forty-five dollars and eighty-eight cents . . . . .	245 88
For Bridget McLaughlin of Boston, mother of the late William McLaughlin, for compensation for the death of her son by accident at Commonwealth pier, South Boston, on April sixteenth, nineteen hundred and twenty-three, the sum of twenty-one hundred and twenty dollars . . . . .	2,120 00
For M. Ferreira of Fall River, to cover damages to his automobile caused by collision with a watering cart under tow of car operated by an employee of the division of highways of the department of public works, the sum of five hundred dollars . . . . .	500 00
For R. S. Whitten of Foxborough, for damage to property caused by a grass fire started by sparks from steam roller owned by the division of highways of the department of public works, the sum of seventy-five dollars . . . . .	75 00

*Service of the Department of Public Works.*

For the construction of a state highway in the town of Hingham, as authorized by chapter four hundred and eighteen of the acts of the present year, a sum not exceeding fifty thousand dollars in anticipation of a further sum of one hundred thousand dollars to be appropriated in the fiscal year nineteen hundred and twenty-four; provided, however, that the town of Hingham is hereby authorized and required to raise and pay into the treasury of the commonwealth the sum of one hundred thousand dollars before the work authorized by this appropriation begins . . . . .	50,000 00
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Division of Waterways and Public Lands:

- For the supervision and operation of Commonwealth pier five, including the salaries or other compensation of employees, and for the repair and replacement of equipment and other property, there may be expended such additional sum, not exceeding twenty thousand dollars, from item six hundred and thirty-three of the general appropriation act as may be needed.
- For the operation and maintenance of the New Bedford state pier, a sum not exceeding two thousand dollars, the same to be in addition to any amount heretofore appropriated for the purpose \$2,000 00

Specials:

- For the improvement of Plymouth harbor, as authorized by chapter forty-six of the resolves of the present year, a sum not exceeding fifty-one thousand dollars 51,000 00
- For the construction of a breakwater in the town of Hull at Pemberton Point, as authorized by chapter four hundred and forty of the acts of the present year, a sum not exceeding thirty thousand dollars 30,000 00
- For the construction of a new channel in Herring river in the town of Wellfleet, a sum not exceeding ten thousand dollars 10,000 00
- For the improvement of Neponset river, as authorized by chapter three hundred and fifty-three of the acts of the present year, the sum of twenty-seven thousand dollars from receipts in the Port of Boston Fund, and in addition thereto the sum of thirteen thousand dollars is hereby transferred from the appropriation made in item six hundred and thirty-nine of the general appropriation act 27,000 00

Miscellaneous.

Division of Highways (the following appropriations for the operation and maintenance of this division, except as otherwise provided, are made from the receipts in the Motor Vehicle Fees Fund):

- For the personal services of the chief engineer, engineers and office assistants, including certain clerks and stenographers, a sum not exceeding three thousand dollars, the same to be in addition to any amount heretofore appropriated for the purpose 3,000 00
- For the construction and repair of town and county ways, a sum not exceeding seventy-one thousand dollars, the same to be in addition to any amount heretofore appropriated for the purpose 71,000 00
- For the care of snow on highways, as provided by section eleven of chapter eighty-four of the General Laws, a sum not exceeding twenty thousand dollars, the same to be in addition to any amount heretofore appropriated for the purpose 20,000 00

Division of Waterways and Public Lands:

- For expenses authorized by chapter four hundred and fifty-three of the acts of the present year, relative to access to great ponds, a sum not exceeding five hundred dollars 500 00
- For expenses of the commission to investigate and report relative to highways, parks and reservations along the Connecticut river, as authorized by chapter sixty-nine of the resolves of the present year, a sum not exceeding one thousand dollars 1,000 00

Division of Highways:

- For the construction of a highway in the city of Revere, as authorized by chapter five hundred and one of the acts of nineteen hundred and twenty-two, as amended by chapter four hundred and eighty-one of the acts of the present year, at a cost not exceeding one hundred thousand dollars, one half of which shall be assessed upon the metropolitan parks district, and the balance of fifty thousand dollars shall be paid from Motor Vehicle Fees Fund 50,000 00



## DIVISION OF HIGHWAYS.

## EXPENDITURES.

Summary of expenditures by the Division of Highways during the fiscal year ending Nov. 30, 1923:—

For construction of State highways, under Chapter 81, General Laws . . . . .	\$2,500,585 45
For maintenance of State highways, under Section 13, Chapter 81, General Laws . . . . .	3,007,901 12
For construction of town and county ways, under Section 34, Chapter 90, General Laws as amended . . . . .	889,067 34
For construction and repair of ways in certain towns, under Section 23, Chapter 81, General Laws . . . . .	18,672 38
For highways in the five western counties, under Chapter 221, General Acts of 1915 as amended . . . . .	477,291 86
For aiding towns in the repair and improvement of public ways, under Section 26, Chapter 81, General Laws as amended . . . . .	633,978 01
For the construction of a State highway in Hingham, under Chapter 213, General Acts of 1916, Chapter 138, Acts of 1921, and Chapter 418, Acts of 1923 . . . . .	51,254 26
For the construction of a highway in the city of Chelsea, under Chapter 546, Acts of 1922 . . . . .	9,745 26
For the construction of a highway in the city of Revere, under Chapter 501, Acts of 1922 as amended . . . . .	310 77
For the care of snow on highways, under Chapter 126, Acts of 1923 . . . . .	58,118 92
For administering the law relative to advertising signs near highways, under Chapter 126, Acts of 1923 . . . . .	9,249 66
For the maintenance and operation of the bridge over Merrimac River between Newburyport and Salisbury, under Chapter 716, Acts of 1912, and Chapter 126, Acts of 1923 . . . . .	24,476 95
For the maintenance and operation of the bridge over Taunton Great River at Brightman Street, in Fall River, under Chapter 717, Acts of 1912, and Chapter 126, Acts of 1923 . . . . .	27,342 79
For the care, repair and storage, replacement and purchase of road-building machinery and tools, under Chapter 126, Acts of 1923 . . . . .	250,455 64
For the suppression of gypsy and brown-tail moths on State highways, under Chapter 126, Acts of 1923 . . . . .	14,000 00
For general expenses, under Chapter 126, Acts of 1923 . . . . .	63,169 27
Total . . . . .	\$8,035,619 68

## CO-OPERATIVE WORK — SUPERVISION OF EXPENDITURES.

The Division has supervised the expenditures during the year by cities, towns and counties, under chapter 81, General Laws, as amended by section 1 of chapter 120, Acts of 1921, and as amended in section 26 by chapter 281, Acts of 1922, and under section 34 of chapter 90, General Laws, as revised by section 1 of chapter 112, Acts of 1921, of approximately \$1,528,995.63 for co-operative work, in repairing, maintaining and improving certain public ways, and for other road work for which the towns and cities made contributions. All such work was carried out in conformity with contracts, specifications and plans approved by the Division.

## PETITIONS, MEETINGS AND HEARINGS.

In addition to the regular weekly meetings of the Division throughout the year, numerous hearings and conferences have been held, including the annual meeting and hearing in the several counties in the Commonwealth, for the open discussion of questions relative to the public ways, as required by section 1, chapter 81, General Laws; hearings on petitions for the relocation of street

railway tracks in Leicester, Fairhaven, Boston, Westfield, Chicopee, Brimfield, Wilmington, Charlton and Dartmouth; appeals from the action taken by the registrar of motor vehicles in the suspension or revocation of certain licenses to operate motor vehicles; and on the matter of outdoor advertising.

Petitions were received and contracts signed during the year, as follows:—

	Petitions.	Contracts.
State highways	7	54
Work under section 34, chapter 90, General Laws, as amended	82	185
Work under section 26, chapter 81, General Laws, as amended	145	145
Work under section 23, chapter 81, General Laws	—	—
Work under special acts	—	8
Totals	234	392

## GENERAL STATEMENT AS TO SURVEYS, PLANS, ESTIMATES AND OTHER WORK DURING THE YEAR.

*State Highways.*—During the year ending Nov. 30, 1923, the Division completed work on about 38.4 miles of State highway, portions of which were laid out in 1922. Construction was commenced, but not completed, on over 19 miles of road in 13 cities and towns. Layouts were made of 54.936 miles of State highway in 33 cities and towns. Under chapter 81, General Laws, as amended by chapter 427, Acts of 1921, 5.920 miles of State highway were discontinued. The total length of State highways at the end of the year was 1,489.189 miles.

*Surveys, Estimates and Designs.*—During the year preliminary surveys, plans and estimates were made on contemplated State highways in 28 towns covering a distance of 35 miles. Surveys, plans and estimates were made for resurfacing or reconstruction in 37 towns covering a distance of 51.6 miles. Lines and grades for construction on State highways were made in 20 towns covering a distance of 43.11 miles, and for resurfacing and reconstruction in 22 towns for a distance of 3.36 miles. Final surveys were made on completed State highways in 23 towns for a distance of 39.0 miles, for resurfacing or reconstruction in 12 towns for a distance of 17.0 miles, and on roads other than State highways in 24 towns for a distance of 37.0 miles. Under section 23, chapter 81, General Laws, and section 34, chapter 90, General Laws as revised, and for roads to be constructed by the towns, surveys, plans and estimates have been made in 107 towns for a distance of 79.5 miles.

Lines and grades for construction have been made in 107 towns for a distance of 78.5 miles.

Under chapter 221, General Acts of 1915 as amended, and for work under other special acts, surveys have been made in 5 towns for a distance of 3.5 miles; plans and estimates in 5 towns for a distance of 13.5 miles; and lines and grades for construction in 6 towns for a distance of 13.5 miles.

Layout plans have been made in 33 towns, covering a distance of 54.936 miles.

Plans to accompany decrees for street railway locations on State highways have been made in 5 towns.

*Roads constructed in 1923.*—Construction has been completed on 38.40 miles of State highway, 2.42 miles of highways under the provisions of section 23, chapter 81, General Laws, 82.76 miles of highways under the provisions of section 34, chapter 90, General Laws as revised, and 15.39 miles of highways under the provisions of special acts, making a total of 138.97 miles completed during the year.

Of the above roads completed this year, .02 of a mile was of granite block; 32.24 miles were of gravel; 14.38 miles were of bituminous concrete; 63.41 miles were of bituminous macadam; 4.42 miles were of water-bound macadam with a bituminous surface treatment; 12.91 miles were of reinforced concrete; 9.53



miles were of gravel with a bituminous treatment, and 2.06 miles were earth roads, that is, surfaced with the best available material.

*Resurfacing and Widening.* — During the year 9.32 miles of State highway were widened but not resurfaced, 24.06 miles were resurfaced and widened, and 11.05 miles resurfaced but not widened. These figures are for completed work. There is uncompleted work in various stages on a number of miles of road where the work will be completed next year.

*Permits.* — There were 1,410 permits issued during the year for opening or occupying State highways for various purposes.

*Trees on State Highways.* — During the last nineteen years 46,865 trees have been planted on the borders of State highways, of which 817 were planted this year, the Division continuing its policy of planting quick-growing trees and hedges to replace guard rails.

*Engineering Advice to Municipal Authorities.* — The Division furnished, without charge, engineering advice to 16 cities and towns in accordance with the provisions of section 1, chapter 81, General Laws.

*Approval of Specifications.* — The Division approved during the year, under the provisions of section 7, chapter 44, General Laws as amended, specifications for the construction of 42 roads in 37 towns.

### STATE HIGHWAYS.

General Laws, chapter 81, section 4, provides that —

“If county commissioners, aldermen or selectmen adjudge that public necessity and convenience require that the commonwealth lay out and take charge of a new or existing way as a highway in whole or in part, in their county, city or town, they may apply, by a written petition, to the division, requesting that said way be laid out and taken charge of by the commonwealth.”

Petitions under the aforesaid section have been received during the year, as follows: —

**SELECTMEN OF BRIMFIELD.** — Road locally known as the Sturbridge Road, extending from Brimfield Centre to the dividing line between the towns of Brimfield and Sturbridge. Received July 5, 1923.

**COUNTY COMMISSIONERS OF DUKES COUNTY.** — Road extending from the village of Edgartown in the town of Edgartown to the village of West Tisbury in the town of West Tisbury. Received June 4, 1923.

**SELECTMEN OF HUBBARDSTON.** — Road extending from the dividing line between the towns of Gardner and Hubbardston to the dividing line between the towns of Hubbardston and Rutland. Received Nov. 12, 1923.

**SELECTMEN OF METHUEN.** — Road locally known as Broadway, extending from its junction with Pleasant Street to the New Hampshire line. Received Nov. 2, 1923.

**SELECTMEN OF MILTON.** — Road locally known as Canton Avenue and Blue Hill Avenue, extending from the dividing line between the towns of Canton and Milton to the junction of Blue Hill Avenue and the Blue Hills Parkway. Received June 27, 1923.

**SELECTMEN OF ROCHESTER.** — Road locally known as the Tremont Road, extending from the dividing line between the towns of Wareham and Rochester to the 1909 State highway layout near the property of Tirzah S. Rowley. Received Nov. 5, 1923.

**SELECTMEN OF WAREHAM.** — Road locally known as the Tremont Road, extending from the dividing line between the towns of Rochester and Wareham to the South Wareham Road at Wareham Centre. Received Nov. 5, 1923.

### CONSTRUCTION AND RECONSTRUCTION OF STATE HIGHWAYS.

(Chapter 81, General Laws.)

The following contracts were entered into during the year for the construction and reconstruction of State highways in various municipalities: —



*Harwich.*

April 3, 1923, contract made with the Boston Bridge Works, Inc., of Boston for making alterations and repairs to the bridge over Herring River on the State highway. The proposal amounted to \$14,080.00. Work completed Aug. 14, 1923. Expenditure during 1923, \$19,740.31.

*Lunenburg.*

April 17, 1923, contract made with Ralph E. Bull of Fitchburg for the surfacing of 9,308 feet of State highway on Massachusetts Avenue, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$74,685.90. Work completed Dec. 4, 1923. Expenditure during 1923, \$67,-946.69.

*Hinsdale.*

April 17, 1923, contract made with the Town of Hinsdale for the construction of about 904 feet of State highway on the Dalton Road, the surface consisting of bituminous macadam 18 feet wide. Work completed June 26, 1923. Expenditure during 1923, \$8,863.90.

*Framingham.*

April 17, 1923, contract made with the Framingham Construction & Supply Company of Framingham for the surfacing of about 923 feet of State highway on Pleasant Street, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$9,198.25. Work completed Aug. 14, 1923. Expenditure during 1923, \$9,923.41.

*Norwood.*

April 17, 1923, contract made with the Rowe Contracting Company of Malden for the surfacing of 5,625 feet of State highway on Washington Street, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$65,929.25. Work completed Nov. 6, 1923. Expenditure during 1923, \$62,-733.28.

*Gloucester.*

April 17, 1923, contract made with Welch & Moynihan of Salem for the construction of about 6,288 feet of State highway on Essex Avenue, the surface consisting of bituminous macadam 18 to 27 feet wide. The proposal amounted to \$74,892.30. Work completed Sept. 25, 1923. Expenditure during 1923, \$73,206.59.

*Rutland.*

April 24, 1923, contract made with the Lane Construction Corporation of Meriden, Connecticut, for the construction of 3.64 miles of State highway on the Paxton Road, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$175,519.75. Work completed Dec. 26, 1923. Expenditure during 1923, \$149,467.75.

*Mendon.*

May 1, 1923, contract made with Luigi C. Carchia Company of Boston for the construction of 1,195 feet of State highway on the Hopedale-Bellingham Road, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$13,473.85. Work practically completed. Expenditure during 1923, \$18,767.66.

*Wrentham-Norfolk-Walpole.*

May 8, 1923, contract made with the Aleo Contracting Company, Inc., of Boston for the surfacing of about 9,753 feet of State highway on Dedham Street in Wrentham, 7,651 feet of State highway on Dedham Street in Norfolk, and 16,253 feet of State highway on Main Street in Walpole (also known as the Providence Turnpike), the surface consisting of cement concrete 20 feet wide, except on four short sections totalling about 3,880 feet on which the surface consists of bituminous macadam. The proposal amounted to \$349,-987.00. Work completed Dec. 26, 1923. Expenditure during 1923, \$322,-792.70.

*Burlington.*

May 8, 1923, contract made with Luigi C. Carehia Company of Boston for the surfacing of 3.761 miles of State highway on Cambridge street, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$131,919.95. Work completed Dec. 26, 1923. Expenditure during 1923, \$139,728.86.

*Easton.*

May 29, 1923, contract made with Powers Brothers of Brockton for the construction of about 3.84 miles of State highway on Washington and Turnpike Streets, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$259,753.50. Work completed Dec. 18, 1923. Expenditure during 1923, \$257,951.24.

*Lanesborough.*

May 29, 1923, contract made with the Lane Construction Corporation of Meriden, Connecticut, for the construction of about 2.69 miles of State highway on the Pittsfield-Williamstown Road, the surface consisting of cement concrete 18 feet wide. The proposal amounted to \$175,164.50. Work completed Nov. 20, 1923. Expenditure during 1923, \$145,506.78.

*Westfield.*

May 29, 1923, contract made with Daniel O'Connell's Sons of Holyoke for the construction of a bridge and approaches on 781 feet of State highway at the Frog Hole Bridge, the surface consisting of bituminous macadam 20 to 30 feet wide. The proposal amounted to \$29,123.88. Work completed Nov. 20, 1923. Expenditure during 1923, \$23,834.81.

*Ipswich.*

June 5, 1923, contract made with McCabe & Giovannini of Boston for the surfacing of about 2.134 miles of State highway on Bay Road, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$65,778.70. Work completed Oct. 2, 1923. Expenditure during 1923, \$59,493.33.

*Adams.*

June 5, 1923, contract made with Carl B. Lindholm of Pittsfield for the surfacing of about 3,000 feet of State highway, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$26,718.25. Work completed Nov. 27, 1923. Expenditure during 1923, \$30,013.54.

*Edgartown-West Tisbury.*

June 19, 1923, contract made with Michael F. Roach of East Bridgewater for the construction of 25,416 feet of State highway on the West Tisbury Road in Edgartown, and 17,744 feet of State highway on the same road in West Tisbury, the surface consisting of bituminous concrete 18 feet wide. The proposal amounted to \$142,484.00. Work about 90 per cent completed. Expenditure during 1923, \$122,721.01.

*Dedham.*

June 26, 1923, contract made with Charles M. Callahan of Boston for the reconstruction of a drainage system on the State highway (Washington Street). Work completed Sept. 25, 1923. Expenditure during 1923, \$10,855.73.

*Brimfield.*

June 26, 1923, contract made with D'Onfro Brothers, Inc., of Leominster for the construction of about 4.205 miles of State highway on the Sturbridge Road, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$236,168.36. Work about 50 per cent completed. Expenditure during 1923, \$126,237.60.



*Fall River—Somerset.*

July 3, 1923, contract made with Frank C. Taylor of New Bedford for the reconstruction of fender piers to the Brightman Street Bridge over the Taunton River. Work nearing completion. Expenditure during 1923, \$12,920.25.

*Lakeville—Freetown.*

July 17, 1923, contract made with Thomas G. Jewett, Jr., of New Bedford for the construction of about 5.318 miles of State highway on Bedford Street and Lakeside Avenue in Lakeville and the New Bedford Road in Freetown, the surface consisting of bituminous macadam 18 to 25 feet wide. The proposal amounted to \$141,105.60. Work completed Dec. 18, 1923. Expenditure during 1923, \$126,141.93.

*Southampton.*

July 17, 1923, contract made with the Hoyt Construction Company of Holyoke for the construction of about 2.203 miles of State highway on Main Street, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$96,663.35. Work completed Nov. 27, 1923. Expenditure during 1923, \$95,544.79.

*Middleborough.*

July 24, 1923, contract made with the Federal Contracting Company, Inc., of Stoneham for the construction of about 2,002 feet of State highway on Everett and Murdock Streets, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$15,386.50. Work completed Nov. 27, 1923. Expenditure during 1923, \$14,377.88.

*Dracut.*

July 31, 1923, contract made with Antonio Pallatto of Dracut for the construction of about 3,603 feet of State highway on the Black North Road, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$25,981.00. Work completed Nov. 20, 1923. Expenditure during 1923, \$23,408.83.

*Rehoboth.*

July 31, 1923, contract made with Perini & Sons, Inc., of Ashland for the construction of about 7,693 feet of State highway on the Taunton—Providence Turnpike, the surface consisting of cement concrete 20 feet wide, except on 1,150 feet where the surface consists of bituminous macadam. The proposal amounted to \$83,569.15. Work completed Dec. 18, 1923. Expenditure during 1923, \$74,448.76.

*West Brookfield.*

July 31, 1923, contract made with the Bettcher Construction Company, Inc., of Shelburne for the construction of a bridge over the Quaboag River and approaches on 350 feet of State highway, the surface consisting of bituminous macadam 18 to 30 feet wide. The proposal amounted to \$19,354.20. Work about 85 per cent completed. Expenditure during 1923, \$16,939.40.

*Milton.*

Aug. 7, 1923, contract made with the Lane Construction Corporation of Meriden, Connecticut, for the construction of about 3.534 miles of State highway on Blue Hill Avenue, the surface consisting of bituminous macadam 21 feet wide. The proposal amounted to \$145,345.25. Work about 60 per cent completed. Expenditure during 1923, \$92,791.54.

*Middleborough—Rochester—Wareham.*

Aug. 7, 1923, contract made with the Lane Construction Corporation of Meriden, Connecticut, for the construction of about 4.076 miles of State highway on Wareham Street in Middleborough, King's Highway and the Tremont Road in Rochester, and the Tremont Road in Wareham, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$152,576.75. Work about 60 per cent completed. Expenditure during 1923, \$95,748.14.



*North Adams.*

Aug. 21, 1923, contract made with the City of North Adams for the construction of about 1,100 feet of State highway on the Hodge Cross Road, the surface consisting of cement concrete 20 feet wide. Work completed Dec. 8, 1923. Expenditure during 1923, \$8,152.40.

*Hingham.*

Aug. 28, 1923, contract made with Bradford Weston of Hull for the construction of about 1.74 miles of State highway on Rockland Street, the surface consisting of bituminous macadam 30 feet wide, except on 1,770 feet, where the surface consists of cement concrete. The proposal amounted to \$87,238.50. Work about 40 per cent completed. Expenditure during 1923, \$31,148.37.

*Bourne.*

Aug. 28, 1923, contract made with the Canedy Construction Company of New Bedford for the construction of about 2,755 feet of State highway, including a bridge, on the road from Buzzards Bay to Falmouth, the surface consisting of bituminous concrete 20 feet wide. The proposal amounted to \$69,940.30. Work about 30 per cent completed. Expenditure during 1923, \$19,688.19.

*Gay Head.*

Aug. 28, 1923, contract made with Michael F. Roach of East Bridgewater for the surfacing of about 3.117 miles of State highway on the road from Chilmark to the Gay Head Lighthouse, the surface consisting of bituminous concrete 18 feet wide. The proposal amounted to \$84,087.25. Expenditure during 1923, \$303.60.

*Whately.*

Aug. 28, 1923, contract made with the Lane Construction Corporation of Meriden, Connecticut, for the surfacing of about 1.56 miles of State highway on Swamp Road and Claverick Street, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$33,570.00. Work completed Nov. 27, 1923. Expenditure during 1923, \$30,337.82.

*Dalton.*

Sept. 4, 1923, contract made with David W. Dwyer of Dalton for the construction of a bridge over the Housatonic River and approaches on 200 feet of State highway, the surface consisting of bituminous macadam 21 to 26 feet wide. The proposal amounted to \$11,144.90. Work about 50 per cent completed. Expenditure during 1923, \$6,674.59.

*Wilmington.*

Sept. 4, 1923, contract made with the Federal Contracting Company of Stoneham for the construction of about 1,664 feet of State highway on Main Street, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$11,516.75. Work completed Nov. 27, 1923. Expenditure during 1923, \$11,557.21.

*Braintree.*

Sept. 4, 1923, contract made with Ezekiel C. Sargent of Quincy for the surfacing of about 1,960 feet of State highway on Quincy Avenue, the surface consisting of bituminous macadam 20 to 26 feet wide. The proposal amounted to \$23,129.15. Work completed Nov. 13, 1923. Expenditure during 1923, \$25,672.40.

*Palmer-Monson.*

Sept. 18, 1923, contract made with the Standard Engineering and Contracting Company of Toledo, Ohio, for the construction of a creosoted wood block floor and cleaning and painting a bridge over the Quaboag River on the State highway. The proposal amounted to \$2,936.00. Work practically completed. Expenditure during 1923, \$4,389.10.

*Sheffield.*

Sept. 18, 1923, contract made with Perini & Sons, Inc., of Ashland for the construction of about 3.05 miles of State highway on the Ashley Falls Road, the surface consisting of cement concrete 18 feet wide. The proposal amounted to \$165,457.50. Work about 10 per cent completed. Expenditure during 1923, \$16,128.69.

*Dalton.*

Sept. 25, 1923, contract made with the Hoyt Construction Company of Holyoke for the construction of a bridge over the Housatonic River and approaches on about 350 feet of State highway on the Jericho Road, the surface consisting of bituminous macadam from 18 to 26 feet in width. The proposal amounted to \$14,132.35. Work about 50 per cent completed. Expenditure during 1923, \$8,218.65.

*North Attleborough-Attleboro.*

Sept. 25, 1923, contract made with T. J. Quinn of Ashton, R. I., for the surfacing of about 200 feet of State highway on the Providence Turnpike in North Attleborough, and 17,311 feet of State highway on the same road in Attleboro, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$197,984.80. Work about 10 per cent completed. Expenditure during 1923, \$17,609.25.

*Concord.*

Oct. 2, 1923, contract made with Paul J. Keating of Fitchburg for the construction of about 2,688 feet of State highway on Massachusetts Avenue, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$12,663.65. Work completed Nov. 27, 1923. Expenditure during 1923, \$12,187.05.

*Lunenburg.*

Oct. 9, 1923, contract made with Ralph E. Bull of Fitchburg for the reconstruction of about 2,100 feet of State highway on Massachusetts Avenue, the surface consisting of gravel. Work about 80 per cent completed. Expenditure during 1923, \$14,606.40.

*Essex.*

Oct. 9, 1923, contract made with Welch & Moynihan of Salem for the reconstruction of a stone masonry sea wall and the placing of rip rap on about 400 feet of State highway on Main Street. The proposal amounted to \$6,864.50. Work about 30 per cent completed. Expenditure during 1923, \$2,249.87.

*Williamstown.*

Oct. 16, 1923, contract made with the Town of Williamstown for building a retaining wall on 200 feet of State highway on the Green River Road. Work completed Oct. 23, 1923. Expenditure during 1923, \$1,500.00.

*Wellfleet-Truro.*

Oct. 30, 1923, contract made with the Lane Construction Corporation of Meriden, Connecticut, for the surfacing of about 21,046 feet of State highway in Wellfleet and Truro, the surface consisting of bituminous concrete 18 to 21 feet wide. The proposal amounted to \$110,086.30. Work about 2 per cent completed. Expenditure during 1923, \$2,159.86.

*Scituate.*

Nov. 6, 1923, contract made with Reynolds Brothers, Inc., of Boston for the construction of about 2,480 feet of State highway on Main Street, the surface consisting of bituminous macadam 18 feet wide. The proposal amounted to \$28,068.30. Work about 10 per cent completed. Expenditure during 1923, \$2,823.48.



*West Brookfield.*

Nov. 13, 1923, contract made with the Lane Construction Corporation of Meriden, Connecticut, for the reconstruction of approaches to the bridge over the Boston & Albany Railroad on about 1,450 feet of State highway, and the surfacing over the bridge, the surface consisting of bituminous macadam 20 to 30 feet wide. The proposal amounted to \$18,029.50. Work about 15 per cent completed. Expenditure during 1923, \$2,282.61.

*Marion-Wareham.*

Nov. 13, 1923, contract made with Frank C. Taylor of New Bedford for the reconstruction of bridges over the Weweantic River on the State highway in Marion and Wareham. Work completed Nov. 27, 1923. Expenditure during 1923, \$1,487.50.

*Provincetown.*

Nov. 19, 1923, contract<sup>1</sup> made with Nickerson and Edwards of Chatham for the construction of rip rap along a section of State highway. The proposal amounted to \$19,872.25. Work not begun.

*Revere.*

Nov. 20, 1923, contract made with the M. McDonough Company of Swampscott for the construction of about 6,600 feet of State highway on a new road from Malden to Broadway in the city of Revere, the surface consisting of bituminous macadam 28 feet wide. The proposal amounted to \$72,319.50. Expenditure during 1923, \$310.77.

*Middleborough-Bridgewater.*

Nov. 20, 1923, contract made with the Engineering Service & Construction Company of Boston for the construction of a bridge over the Taunton River and approaches on about 577 feet of State highway on Summer Street, the surface consisting of bituminous macadam 18 to 26 feet wide. The proposal amounted to \$43,980.25. Expenditure during 1923, \$43.70.

*Bernardston.*

Nov. 20, 1923, contract made with Charles I. Hosmer of Montague for the construction of a bridge over Falls River and approaches on about 950 feet of State highway on Church Street, the surface consisting of bituminous macadam 18 to 26 feet wide. The proposal amounted to \$38,377.30. Expenditure during 1923, \$43.56.

*Haverhill.*

Nov. 27, 1923, contract made with Luigi C. Carchia of Boston for the reconstruction of about 2.63 miles of State highway on River Street, the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$164,769.25. Expenditure during 1923, \$86.95.

*Swansea.*

Nov. 27, 1923, contract made with Joseph McCormick of Providence, R. I., for the construction of about 3,652 feet of State highway on the road to Providence, R. I., the surface consisting of cement concrete 20 feet wide. The proposal amounted to \$45,621.50. Expenditure during 1923, \$46.39.

*Braintree.*

Nov. 27, 1923, contract made with Frank F. McCarthy of Newton for the construction of a bridge over the Monatiquot River and approaches thereto on 600 feet of State highway on Washington and Hancock Streets, the surface consisting of bituminous macadam about 44 feet wide. The proposal amounted to \$17,305.85. Expenditure during 1923, \$85.15.

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<sup>1</sup> Made by the Division of Waterways and Public Lands and the Division of Highways acting jointly.



The expenditures during the year in various counties were: —

Barnstable, \$22,976.58	Hampshire, \$215,153.43
Berkshire, \$405,882.52	Middlesex, \$62,486.91
Bristol, \$514,207.11	Norfolk, \$108,741.53
Dukes, \$143,218.27	Plymouth, \$190,163.77
Essex, \$255,819.52	Suffolk, \$3,970.10
Franklin, \$51,136.65	Worcester, \$298,353.73
Hampden, \$228,475.33	Total, \$2,500,585.45

Details of the foregoing expenditures follow: —

*Barnstable County.* — Bourne, \$22,976.58.

*Berkshire County.* — Becket, \$13,157.79; Dalton, \$43,752.18; Egremont, \$1,205.31; Gt. Barrington, \$59,730.70; Hinsdale, \$10,344.38; Lanesborough, \$169,809.78; Lee, \$5.48; New Ashford, \$23,868.93; No. Adams, \$9,514.04; Sheffield, \$18,822.55; Williamstown, \$8,532.52; Windsor, \$47,138.86.

*Bristol County.* — Easton, \$351,363.14; Freetown, \$72,133.18; Raynham, \$3,773.22; Rehoboth, \$86,883.43; Swansea, \$54.14.

*Dukes County.* — Edgartown, \$81,634.42; West Tisbury, \$61,583.85.

*Essex County.* — Danvers, \$46,862.65; Gloucester, \$85,433.79; Ipswich, \$13,757.31; Newbury, \$30,727.71; Rowley, \$30,519.69; Topsfield, \$48,518.37.

*Franklin County.* — Bernardston, \$50.83; Shelburne, \$51,085.82.

*Hampden County.* — Brimfield, \$147,322.21; Southwick, \$53,227.83; Westfield, \$27,815.77; Wilbraham, \$109.52.

*Hampshire County.* — Cummington, \$54,528.88; Goshen, \$46,054.18; Huntington, \$3,067.38; Southampton, \$111,502.99.

*Middlesex County.* — Concord, \$14,222.57; Dracut, \$27,318.65; Lowell, \$7,458.15; Wilmington, \$13,487.54.

*Norfolk County.* — Braintree, \$99.37; Canton, \$352.28; Milton, \$108,289.88.

*Plymouth County.* — Bridgewater, \$25.50; Lakeville, \$75,077.38; Middleborough, \$2,260.30; Rochester, \$24,582.87; Scituate, \$3,295.08; Wareham, \$84,922.64.

*Suffolk County.* — Boston, \$20.54; Revere, \$3,949.56.

*Worcester County.* — Ashburnham, \$178.50; Grafton, \$1,002.76; Mendon, \$41,158.98; Petersham, \$77.02; Rutland, \$174,432.33; Sterling, \$9,817.89; Sutton, \$1,484.26; Upton, \$1,030.46; Wales, \$2,013.00; West Boylston, \$44,725.99; West Brookfield, \$22,432.54.

#### MAINTENANCE OF STATE HIGHWAYS.

(Section 13, Chapter 81, General Laws.)

The expenditures during the year in various counties were: —

Barnstable, \$154,777.05	Middlesex, \$321,774.59
Berkshire, \$249,051.70	Nantucket, \$1,629.16
Bristol, \$151,466.50	Norfolk, \$565,905.29
Dukes, \$38,183.50	Plymouth, \$176,906.81
Essex, \$405,354.63	Suffolk, \$12,224.37
Franklin, \$155,053.04	Worcester, \$559,721.85
Hampden, \$111,536.97	Total, \$3,007,901.12
Hampshire, \$104,315.66	

Details of the foregoing expenditures follow: —

*Barnstable County.* — Barnstable, \$22,030.75; Bourne, \$23,621.95; Brewster, \$7,462.84; Chatham, \$3,986.07; Dennis, \$7,498.46; Eastham, \$1,004.20; Falmouth, \$24,562.52; Harwich, \$25,529.47; Mashpee, \$2,972.87; Orleans, \$1,401.49; Provincetown, \$4,644.90; Sandwich, \$8,006.25; Truro, \$3,237.34; Wellfleet, \$4,097.88; Yarmouth, \$14,720.06.

*Berkshire County.* — Adams, \$36,051.65; Becket, \$15,493.87; Cheshire, \$10,566.70; Clarksburg, \$2,961.44; Dalton, \$5,427.69; Egremont, \$6,846.15; Florida, \$14,227.32; Gt. Barrington, \$9,626.92; Hancock, \$1,750.79; Hinsdale, \$2,311.50; Lanesborough, \$3,977.45; Lee, \$50,342.39; Lenox, \$11,643.91; New Ashford,



\$1,214.32; New Marlborough, \$143.49; No. Adams, \$8,979.90; Pittsfield, \$8,948.56; Richmond, \$4,401.93; Savoy, \$2,933.81; Sheffield, \$6,549.31; Stockbridge, \$5,566.72; Washington, \$563.70; Williamstown, \$14,437.44; Windsor, \$24,084.74.

*Bristol County.* — Acushnet, \$4,156.19; Attleboro, \$17,643.42; Berkley, \$2,731.25; Dartmouth, \$9,041.52; Dighton, \$8,235.68; Easton, \$724.24; Fairhaven, \$2,323.08; Fall River, \$8.41; Freetown, \$1,833.88; Mansfield, \$970.77; No. Attleborough, \$18,936.45; Norton, \$8,086.11; Raynham, \$4,045.72; Rehoboth, \$8,911.68; Seekonk, \$4,267.57; Somerset, \$25,028.86; Swansea, \$16,207.89; Taunton, \$10,230.68; Westport, \$8,083.10.

*Dukes County.* — Chilmark, \$33,648.95; Edgartown, \$806.83; Gay Head, \$1,247.45; Oak Bluffs, \$579.58; Tisbury, \$574.53; West Tisbury, \$1,326.16.

*Essex County.* — Amesbury, \$3,982.02; Andover, \$119,008.82; Beverly, \$6,232.97; Danvers, \$3,899.33; Essex, \$3,774.47; Gloucester, \$6,974.87; Groveland, \$2,344.50; Hamilton, \$6,559.12; Haverhill, \$56,651.71; Ipswich, \$70,333.24; Lawrence, \$1,209.38; Lynn, \$7,834.95; Lynnfield, \$1,910.40; Merrimac, \$24,360.61; Methuen, \$6,774.60; Middleton, \$5,655.15; Newbury, \$9,251.60; Newburyport, \$4,884.74; No. Andover, \$10,109.90; Peabody, \$2,495.48; Rockport, \$2,070.24; Rowley, \$6,738.35; Salem, \$2,427.84; Salisbury, \$10,557.41; Saugus, \$8,860.25; Swampscott, \$3,462.53; Topsfield, \$2,195.15; Wenham, \$7,354.40; West Newbury, \$7,440.60.

*Franklin County.* — Ashfield, \$1,499.94; Bernardston, \$8,546.34; Buckland, \$5,315.58; Charlemont, \$15,318.17; Colrain, \$2,226.37; Conway, \$1,932.89; Deerfield, \$11,650.87; Erving, \$38,561.25; Gill, \$195.75; Greenfield, \$9,312.48; Montague, \$6,240.49; Northfield, \$4,453.59; Orange, \$5,191.83; Shelburne, \$7,462.55; Sunderland, \$1,208.84; Whately, \$35,936.10.

*Hampden County.* — Agawam, \$3,176.64; Blandford, \$2,408.98; Brimfield, \$3,053.71; Chester, \$10,339.66; Chicopee, \$8,032.36; East Longmeadow, \$2,577.26; Holyoke, \$3,921.68; Monson, \$10,681.91; Palmer, \$31,855.69; Russell, \$9,482.66; Southwick, \$4,970.52; Wales, \$2,449.15; West Springfield, \$4,814.98; Westfield, \$6,972.88; Wilbraham, \$6,798.89.

*Hampshire County.* — Amherst, \$6,782.42; Belchertown, \$1,909.71; Cummington, \$10,829.98; Easthampton, \$2,203.30; Goshen, \$11,962.54; Granby, \$5,630.10; Hadley, \$5,113.56; Hatfield, \$2,092.72; Huntington, \$9,168.69; Northampton, \$18,215.68; South Hadley, \$10,267.28; Southampton, \$215.03; Ware, \$11,954.13; Williamsburg, \$7,970.52;

*Middlesex County.* — Acton, \$4,605.93; Arlington, \$1,308.03; Ashby, \$4,871.84; Ashland, \$2,679.08; Ayer, \$2,735.40; Bedford, \$1,202.00; Billerica, \$5,641.35; Boxborough, \$2,575.75; Burlington, \$155,286.59; Chelmsford, \$10,358.44; Concord, \$2,920.32; Dracut, \$3,405.57; Framingham, \$15,517.32; Groton, \$1,989.79; Holliston, \$6,447.30; Hudson, \$1,557.46; Lexington, \$3,729.22; Lincoln, \$1,152.94; Littleton, \$3,450.25; Lowell, \$6,551.33; Malden, \$120.40; Marlborough, \$9,256.55; Medford, \$1,226.33; Melrose, \$848.70; Natick, \$4,391.87; Newton, \$213.54; No. Reading, \$1,876.36; Pepperell, \$3,085.37; Reading, \$7,772.29; Shirley, \$2,796.26; Somerville, \$1,240.35; Stoneham, \$5,917.17; Sudbury, \$4,216.15; Tewksbury, \$3,241.08; Townsend, \$6,212.68; Tyngsborough, \$7,364.58; Waltham, \$868.78; Watertown, \$850.32; Wayland, \$2,019.29; Westford, \$5,550.16; Weston, \$3,516.86; Wilmington, \$5,078.73; Winchester, \$1,710.00; Woburn, \$4,414.86.

*Nantucket County.* — Nantucket, \$1,629.16.

*Norfolk County.* — Avon, \$966.70; Bellingham, \$2,367.84; Braintree, \$33,155.66; Canton, \$8,554.12; Cohasset, \$1,183.71; Dedham, \$17,842.02; Dover, \$4,081.30; Foxborough, \$14,070.37; Franklin, \$4,440.57; Holbrook, \$2,333.28; Milton, \$920.78; Needham, \$3,423.39; Norfolk, \$76,144.90; Norwood, \$72,481.51; Plainville, \$9,095.83; Quincy, \$2,122.01; Randolph, \$2,236.41; Sharon, \$355.17; Stoughton, \$2,517.03; Walpole, \$184,080.47; Wellesley, \$1,557.30; Westwood, \$1,671.56; Weymouth, \$7,740.28; Wrentham, \$112,563.08.

*Plymouth County.* — Abington, \$10,047.44; Bridgewater, \$6,666.73; Brockton, \$7,893.51; Duxbury, \$5,135.62; East Bridgewater, \$4,802.69; Hanover, \$3,878.69; Hingham, \$5,803.68; Kingston, \$5,738.74; Lakeville, \$14,642.86; Marion, \$6,145.69; Marshfield, \$6,580.05; Mattapoisett, \$3,006.80; Middleborough, \$34,970.35; Norwell, \$2,027.34; Pembroke, \$4,687.42; Plymouth, \$8,798.37; Roches-



ter, \$5,463.38; Rockland, \$3,147.47; Scituate, \$3,859.61; Wareham, \$18,650.87; West Bridgewater, \$10,381.88; Whitman, \$4,577.62.

*Suffolk County.* — Boston, \$1,845.16; Chelsea, \$2,430.34; Revere, \$7,948.87.

*Worcester County.* — Ashburnham, \$21,276.83; Athol, \$6,128.66; Auburn, \$6,936.03; Barre, \$5,832.66; Blackstone, \$4,373.37; Brookfield, \$1,594.09; Charlton, \$10,969.48; Douglas, \$1,795.10; Dudley, \$5,385.65; East Brookfield, \$3,751.08; Fitchburg, \$1,331.75; Gardner, \$1,353.28; Grafton, \$12,673.48; Hardwick, \$2,388.58; Harvard, \$2,006.21; Holden, \$8,632.46; Hopedale, \$433.62; Lancaster, \$2,819.90; Leicester, \$200,701.45; Leominster, \$4,247.37; Lunenburg, \$93,333.92; Mendon, \$1,860.50; Milford, \$5,941.71; Millbury, \$5,622.73; Millville, \$3,903.78; New Braintree, \$337.12; No. Brookfield, \$1,734.68; Northborough, \$6,686.02; Northbridge, \$3,968.55; Oakham, \$4,756.98; Oxford, \$4,849.28; Paxton, \$5,149.32; Petersham, \$10,252.72; Phillipston, \$1,542.12; Princeton, \$1,311.87; Rutland, \$4,655.75; Shrewsbury, \$5,481.97; Southborough, \$3,077.86; Southbridge, \$2,149.41; Spencer, \$4,418.28; Sterling, \$7,608.77; Sturbridge, \$2,088.83; Sutton, \$8,739.28; Templeton, \$4,546.60; Upton, \$9,136.90; Uxbridge, \$9,511.19; Warren, \$3,747.09; Webster, \$1,804.84; West Boylston, \$2,545.07; West Brookfield, \$3,696.96; Westborough, \$3,073.80; Westminster, \$10,457.92; Winchendon, \$9,001.28; Worcester, \$8,097.70.

#### HIGHWAY IMPROVEMENTS AUTHORIZED BY SPECIAL ACTS.

The following contracts were entered into during the year for the construction of town ways under special acts of the Legislature.

(Chapter 221, General Acts of 1915, as amended by Chapter 572, Acts of 1920).

##### *Middlefield.*

July 17, 1923, contract made with William H. Hinman, Jr., of Medway for the construction of about 5,350 feet of highway, the surface consisting of gravel 18 feet wide. Work completed Nov. 27, 1923. Expenditure during 1923, \$34,709.96.

##### *Gill.*

July 24, 1923, contract made with Charles I. Hosmer of Montague for the construction of about 2,204 feet of highway on the Greenfield Road, the surface consisting of gravel 18 feet wide. The proposal amounted to \$17,156.70. Work completed Nov. 27, 1923. Expenditure during 1923, \$15,572.92.

##### *Enfield.*

July 31, 1923, contract made with Lawrence J. Kelleher of Montague for the construction of about 2,200 feet of highway on the Ware Road, the surface consisting of bituminous macadam 18 feet wide. Work completed Oct. 9, 1923. Expenditure during 1923, \$2,786.96.

##### *Worthington.*

Aug. 21, 1923, contract made with Joseph McCormick of East Providence, R. I., for the construction of about 4.21 miles of highway on the Peru Road, the surface consisting of gravel 18 feet wide. The proposal amounted to \$165,912.85. Work about 20 per cent completed. Expenditure during 1923, \$28,333.15.

Nov. 27, 1923, contract made with the Town of Worthington for the construction of about 4,225 feet of highway on the Huntington Road, the surface consisting of gravel 15 feet wide. Work completed. Expenditure during 1923, \$1,500.00.

Nov. 27, 1923, contract made with Joseph McCormick of East Providence, R. I., for the construction of about 4,400 feet of highway on the Peru Road, the surface consisting of gravel 18 feet wide. The estimated cost is \$64,648.21. Work not commenced.



*Granville-Southwick.*

Sept. 11, 1923, contract made with Lawrence J. Kelleher of Montague for the construction of about 4,708 feet of highway in Southwick and 12,050 feet of highway in Granville, the surface consisting of gravel 21 feet wide. The proposal amounted to \$23,255.00. Work about 50 per cent completed. Expenditure during 1923, \$10,357.91.

The total expenditures during the year in the five western counties, under said chapter 221 as amended, were \$477,291.86, details of which follow:—

- Route No. 3, Otis, \$121,740.15; Sandisfield, \$45,027.18.*
- Route No. 6, Worthington, \$29,833.15.*
- Route No. 7, Cummington, \$18,970.34; Plainfield, \$12,102.75.*
- Route No. 8, Enfield, \$54,138.52.*
- Route No. 9, Granville, \$10,357.91; Southwick, \$67,099.99.*
- Route No. 10, Ashfield, \$16,852.54.*
- Route No. 11, Gill, \$16,379.36.*
- Route No. 14, Warwick, \$11,855.42.*
- Route No. 16, Wales, \$73.30.*
- Route No. 17, Chesterfield, \$20,859.54; Middlefield, \$52,001.71.*

(Chapter 538, Acts of 1922.)

*Holyoke.*

Nov. 20, 1923, contract made with the City of Holyoke for the construction of about 2,632 feet of highway on the Easthampton Road, the surface consisting of bituminous macadam 18 to 24 feet wide. Work not commenced.

FEDERAL AID IN CONSTRUCTING HIGHWAYS.

Statements as to the acts of Congress and of the Massachusetts Legislature with respect to co-operation between the United States and the States in the construction and maintenance of highways, including the Federal Highway Act approved Nov. 9, 1921, may be found in the annual reports of this Department for the years 1920, 1921 and 1922.

The following Federal-aid allotments have thus far been made to Massachusetts:—

For fiscal year ending June 30, 1917	.	.	.	.	.	.	.	\$73,850	95
For fiscal year ending June 30, 1918	.	.	.	.	.	.	.	147,701	90
For fiscal year ending June 30, 1919	.	.	.	.	.	.	.	958,145	15
For fiscal year ending June 30, 1920	.	.	.	.	.	.	.	1,400,078	27
For fiscal year ending June 30, 1921	.	.	.	.	.	.	.	1,472,788	83
For fiscal year ending June 30, 1922	.	.	.	.	.	.	.	1,096,176	04
For fiscal year ending June 30, 1923	.	.	.	.	.	.	.	730,784	03
For fiscal year ending June 30, 1924	.	.	.	.	.	.	.	950,448	62
Total	.	.	.	.	.	.	.	\$6,829,973	79

The total amount received by Massachusetts from 1916 to Nov. 30, 1923, is \$4,041,253.69.

Projects to the number of 13 have been prepared in addition to those shown in the report of the Department of Public Works, Division of Highways, for 1922. The total mileage included in the various Federal-aid road projects in this State, from the commencement of work of this character to Nov. 30, 1923, inclusive, is 324.418. The mileage in various counties is:—

Barnstable, 31.127 miles	Hampden, 15.786 miles
Berkshire, 45.408 miles	Hampshire, 16.847 miles
Bristol, 24.425 miles	Middlesex, 29.279 miles
Dukes, 3.117 miles	Norfolk, 29.515 miles
Essex, 47.501 miles	Plymouth, 14.310 miles
Franklin, 21.530 miles	Worcester, 45.573 miles

STATEMENT OF FEDERAL-AID ROAD PROJECTS<sup>1</sup> TO NOV. 30, 1923.

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
1	Acushnet-Fairhaven . . . . .	2.182	\$21,820 00	\$21,820 00	Work completed.
2	Hanover . . . . .	2.708	19,480 36	19,480 36	Work completed.
3	Malden-Melrose-Saugus . . . . .	1.162	11,620 00	11,620 00	Work completed.
4	Danvers . . . . .	1.325	15,460 22	15,460 22	Work completed.
5	Windsor-Dalton . . . . .	3.240	64,800 00	64,800 00	Work completed.
6	Sandwich . . . . .	1.818	10,678 02	10,678 02	Work completed.
7	Cummington . . . . .	4.659	86,816 53	86,816 53	Work completed.
8	Athol-Petersham . . . . .	7.016	90,074 51	90,074 51	Work completed.
9	Saugus . . . . .	3.122	65,472 27	65,472 27	Work completed.
10	Braintree . . . . .	2.420	40,554 80	40,554 80	Work completed.
11	Concord-Acton-Littleton . . . . .	4.849	77,600 87	77,600 87	Work completed.
12	Ipswich . . . . .	2.173	21,851 50	21,851 50	Work completed.
13	Littleton-Groton . . . . .	6.450	130,504 25	130,504 25	Work completed.
14	Barnstable . . . . .	3.331	22,687 65	22,687 65	Work completed.
15	Norwell-Hingham . . . . .	4.380	59,501 75	59,501 75	Work completed.
17	Lynnfield-Peabody . . . . .	1.794	35,880 00	35,880 00	Work completed.
18	Lunenburg . . . . .	2.797	55,940 00	55,940 00	Work completed.
19	Taunton . . . . .	2.116	42,320 00	42,320 00	Work completed.
20	Tewksbury . . . . .	2.909	35,211 82	35,211 82	Work completed.
21	Pittsfield-Hancock . . . . .	3.637	72,483 32	72,483 32	Work completed.
22	Greenfield-Bernardston . . . . .	6.426	88,270 71	88,270 71	Work completed.
23	Great Barrington . . . . .	2.123	31,348 89	31,348 89	Work completed.
24	Seekonk . . . . .	2.756	19,527 75	19,527 75	Work completed.
25	Billerica . . . . .	0.578	38,389 77	38,389 77	Work completed.
26	Greenfield-Shelburne:				
	Section 1 . . . . .	5.134	102,680 00	102,680 00	Work completed.
	Section 2 . . . . .	4.401	88,020 00	88,020 00	Work completed.
27	Hamilton-Wenham . . . . .	1.766	20,207 27	20,207 27	Work completed.
28	Lanesborough:				
	Section A . . . . .	0.990	19,780 00	19,780 00	Work completed.
	Section B . . . . .	2.690	53,800 00	37,101 11	Work completed.
29	Ware . . . . .	2.626	46,557 55	46,557 55	Work completed.
30	Brimfield . . . . .	4.206	84,120 00	16,373 52	Work underway.
31	Danvers-Peabody . . . . .	1.107	22,140 00	22,140 00	Work completed.
32	Huntington . . . . .	3.078	97,163 48	97,163 48	Work completed.
33	Acton-Littleton:				
	Section A . . . . .	2.182	43,640 00	43,640 00	Work completed.
	Section B . . . . .	1.624	25,847 25	25,847 25	Work completed.
34	Dudley . . . . .	1.359	27,180 00	27,180 00	Work completed.
35	Haverhill-Methuen . . . . .	4.544	90,880 00	-	Agreement signed.
36	Eastham-Wellfleet-Truro- Provincetown:				
	Section A . . . . .	10.690	91,347 85	91,347 85	Work completed.
	Section B . . . . .	6.719	75,935 60	7,499 36	Work underway.
	Section C . . . . .	8.047	86,130 51	34,052 30	3.6 miles completed.
37	Egremont . . . . .	1.164	20,579 07	20,579 07	Work completed.
38	Peabody-Danvers . . . . .	2.827	56,540 00	56,540 00	Work completed.
39	Williamstown-New Ashford- Lanesborough:				
	Section A . . . . .	0.020	9,123 64	9,123 64	Work completed.
	Section B . . . . .	3.323	66,460 00	56,718 30	Work completed.
	Section C . . . . .	-	-	-	Released.
40	East Brookfield . . . . .	1.011	20,220 00	20,220 00	Work completed.
41	Ashby . . . . .	1.250	22,141 03	22,141 03	Work completed.
42	Washington . . . . .	2.291	45,820 00	45,820 00	Work completed.
43	Leicester . . . . .	0.638	12,760 00	12,760 00	Work completed.
44	Goshen-Cummington-Windsor:				
	Section A . . . . .	1.494	29,880 00	22,980 87	Work completed.
	Section B . . . . .	1.479	50,538 14	18,411 94	Work completed.
	Section C . . . . .	3.780	82,915 42	61,859 07	Work completed.
45	Palmer:				
	Sections A and C . . . . .	1.795	35,900 00	35,900 00	Work completed.
	Section B . . . . .	-	-	-	Released.
46	Upton-Hopedale:				
	Section A . . . . .	1.672	33,440 00	33,440 00	Work completed.
	Section B . . . . .	-	-	-	Released.
47	Barre-Oakham . . . . .	1.737	37,200 75	37,200 75	Work completed.
49	- . . . .	-	-	-	Released.
50	Lunenburg . . . . .	1.763	35,260 00	28,375 05	Work underway.
51	Mendon-Uxbridge:				
	Section A . . . . .	1.959	39,180 00	39,180 00	Work completed.
	Section B . . . . .	2.504	50,080 00	42,860 70	Work completed.
52	Oxford . . . . .	3.208	64,160 00	64,160 00	Work completed.
53	East Brookfield-Spencer-West Brookfield-Brookfield:				
	Section A . . . . .	0.890	17,800 00	17,800 00	Work completed.
	Section B . . . . .	1.682	33,640 00	33,640 00	Work completed.
54	Leicester:				
	Section A . . . . .	0.829	16,580 00	16,580 00	Work completed.
	Section B . . . . .	2.691	53,820 00	41,529 22	Work completed.

<sup>1</sup> All of these projects are now, or will be later, State Highways.



STATEMENT OF FEDERAL-AID ROAD PROJECTS TO NOV. 30, 1923 — *Concluded.*

No.	TOWN.	Miles.	Amount of Federal Aid involved.	Amount received.	Remarks.
55	Quincy . . . . .	0.549	\$10,980 00	\$10,980 00	Work completed.
56	Stoughton . . . . .	2.141	42,820 00	42,820 00	Work completed.
57	Winchester-Woburn . . . . .	3.042	59,131 31	59,131 31	Work completed.
58	Littleton . . . . .	1.345	26,900 00	26,900 00	Work completed.
59	Egremont . . . . .	0.784	15,678 18	15,678 18	Work completed.
60	Middleton-Danvers . . . . .	1.907	38,224 70	38,224 70	Work completed.
61	Winchendon-Templeton . . . . .	5.393	106,117 44	106,117 44	Work completed.
62	Danvers-Topsfield:				
	Section A . . . . .	3.009	60,180 00	60,180 00	Work completed.
	Section B . . . . .	3.513	76,959 91	76,959 91	Work completed.
63	Essex-Ipswich . . . . .	4.489	89,780 00	-	Agreement signed.
64	Norwood . . . . .	1.065	21,300 00	16,573 46	Work completed.
65	North Adams . . . . .	1.638	32,760 00	32,760 00	Work completed.
66	- . . . .	-	-	-	Released.
69	Haverhill . . . . .	2.657	53,140 00	45,552 40	Work completed.
70	Palmer . . . . .	2.550	51,000 00	51,000 00	Work completed.
71	Wrentham . . . . .	1.846	36,940 00	18,621 76	Work underway.
72	Walpole . . . . .	3.078	61,560 00	34,849 60	Work underway.
73	Southwick . . . . .	6.879	135,027 64	95,830 85	Work completed.
74	Becket . . . . .	0.156	16,233 38	-	Work completed.
75	Topsfield-Ipswich-Rowley-				
	Newbury:				
	Section A . . . . .	10.207	207,163 37	207,163 37	Work completed.
	Section B . . . . .	-	-	-	Released.
76	Norfolk . . . . .	1.447	28,940 00	-	Work underway.
77	Merrimac . . . . .	1.020	20,400 00	18,098 35	Work completed.
78	Burlington . . . . .	3.761	75,220 00	50,348 05	Work underway.
79	Great Barrington . . . . .	2.991	59,820 00	53,552 75	Work completed.
80	Lee:				
	Section A . . . . .	0.909	18,180 00	16,053 12	Work completed.
	Section B . . . . .	-	-	-	Released.
81	Deerfield . . . . .	0.710	11,537 50	-	Project sent.
83	Pembroke . . . . .	1.402	28,040 00	-	Project approved.
84	Sterling-West Boylston . . . . .	3.491	59,637 13	46,060 69	Work completed.
85	Dalton (Hinsdale Road):				
	Section A . . . . .	1.033	20,660 00	16,643 20	Work completed.
	Section B . . . . .	0.066	7,638 07	-	Work underway.
86	Gay Head . . . . .	3.117	40,783 51	-	Agreement signed.
87	Dalton (Windsor Road):				
	Section A . . . . .	1.056	21,120 00	18,448 31	Work completed.
	Section B . . . . .	0.038	6,179 93	-	Work underway.
88	Erving . . . . .	4.859	97,180 00	-	Project approved.
89	Easton:				
	Sections A and B . . . . .	3.540	70,800 00	56,031 44	Work completed.
	Section C . . . . .	3.840	62,400 00	36,424 37	Work underway.
90	Brookfield-East Brookfield . . . . .	1.227	25,447 12	-	Project approved.
91	Lowell . . . . .	0.977	19,540 00	15,618 57	Work completed.
92	Bellingham . . . . .	5.250	105,000 00	-	Agreement signed.
93	Wilbraham . . . . .	0.208	87,077 51	-	Project approved.
94	Otis-Sandisfield . . . . .	7.565	122,931 25	57,339 16	Work underway.
95	Westfield . . . . .	0.148	12,677 08	-	Work completed.
96	Rochester-Wareham . . . . .	4.031	68,979 93	-	Work underway.
98	Sheffield . . . . .	3.052	61,133 85	-	Work underway.
99	Gloucester . . . . .	1.191	19,353 75	14,160 72	Work completed.
100	Rutland . . . . .	3.640	59,150 00	43,205 51	Work underway.
101	Hinsdale . . . . .	1.194	27,652 50	-	Project approved.
102	Plainville-Wrentham . . . . .	5.361	87,116 25	-	Project approved.
103	Adams . . . . .	0.568	9,230 00	7,973 20	Work completed.
104	Milton . . . . .	3.534	70,680 00	-	Work underway.
105	Rehoboth . . . . .	1.438	28,760 00	-	Work underway.
106	Bourne . . . . .	0.522	35,002 00	-	Work underway.
107	Southampton . . . . .	2.203	44,060 00	31,407 35	Work completed.
108	Lakeville-Freetown . . . . .	4.583	71,706 11	44,841 60	Work underway.
109	West Brookfield . . . . .	0.066	10,283 73	-	Work underway.
110	Middleborough-Bridgewater . . . . .	0.109	24,580 87	-	Agreement signed.
111	Braintree . . . . .	0.371	7,420 00	-	Work completed.
112	North Attleborough-Attleboro . . . . .	3.278	65,560 00	-	Work underway.
113	Swansea . . . . .	0.692	11,245 00	-	Work underway.
114	Lenox . . . . .	2.408	39,130 00	-	Project approved.
115	Plymouth . . . . .	1.680	27,300 00	-	Project approved.
116	Norwood-Walpole . . . . .	2.453	39,861 25	-	Project sent.
	Totals . . . . .	324.418	\$5,919,072 82	\$4,041,253 69	



## BRIDGES.

During the year the Division has prepared designs and plans for, and done other work relating to, bridges throughout the Commonwealth. The various cities and towns, the localities therein, the character of the structure and other details are as follows:—

## BRIDGES BUILT OR CONTRACTED FOR.

*Town, Locality and Character of Structure.*

Bernardston, Over Falls River, 75-foot concrete arch.  
 Bourne, Over New York, New Haven & Hartford R.R., 34.5-foot concrete beam.  
 Braintree, Over Monatiquot River, 3-span concrete slab, each span 13 feet.  
 Bridgewater-Middleborough, Over Taunton River, 2-span concrete beam each span 35 feet.  
 Brimfield, Over Mill Brook, 18-foot concrete beam.  
 Dalton, Over Housatonic River, 40-foot concrete beam.  
 Dalton, Over Housatonic River, 41-foot concrete beam.  
 Milford, Over Charles River, 10-foot concrete slab.  
 Milford, Over Charles River, 10-foot concrete slab.  
 Otis, Over Farmington River, 13-foot concrete beam.  
 Otis, Over Brook, 12-foot concrete beam.  
 Rehoboth, Over Palmer River, 15-foot concrete beam.  
 Scituate, Over First Herring Brook, 14.3 foot concrete slab.  
 Sheffield, Over Schenob Brook, 44.75 concrete beam.  
 Swansea, Cattle Pass, 6.3-foot concrete slab.  
 Swansea, Cattle Pass, 6.6-foot concrete slab.  
 Wareham, Over Weweantic River, 25-foot concrete beam.  
 West Brookfield, Over Boston & Albany Railroad, 83.45-foot plate girder.  
 West Brookfield, Over Quaboag River, 2-span concrete beam, each span 33 feet.  
 Westfield, Over Westfield River, 36-foot concrete beam.  
 Worthington, Over Middle Branch of Westfield River, 24-foot concrete beam.

## ALTERATIONS, REPAIRS AND EXTENSIONS TO BRIDGES COMPLETED IN 1923.

*Cities and Towns, Locality and Character of Work.*

Adams, Over Hoosic River, Concrete extension of 2-span stone arch, each span 20 feet.  
 Easton, Over Cowesett Brook, Repairs and concrete slab extensions to 3-span stone arch, spans 5.5 to 7 feet.  
 Fall River-Somerset, Over Taunton Great River, Reconstruction of fender pier.  
 Harwich, Over Herring River, Repairs to 118-foot steel truss.  
 North Attleborough, Over Seven Mile River, Concrete extension of 12.5-foot I beam.  
 Palmer-Monson, Over Quaboag River, Creosoted wood block floor.  
 Wareham-Marion, Over Weweantic River, Repairs to cast-iron pile bridge.

## CONTEMPLATED BRIDGES AND STRUCTURES.

*Plans, Studies or Estimates made.**Town, Locality and Character of Structure.*

Barnstable, Over Bumps River, 2-span concrete beam, each span 35 feet.  
 Conway, Over South River, 40-foot concrete beam.  
 Conway, Over South River, 40-foot concrete beam.  
 Conway, Over South River, 40-foot concrete beam.  
 Conway, Over South River, 40-foot concrete beam.  
 Conway, Over South River, 45-foot concrete beam.  
 East Brookfield, Over Dunn Brook, Extension of superstructure.  
 Sheffield, Over Housatonic River, 98.5-foot steel truss.  
 Walpole, Over Neponset River, 21.5-foot concrete beam extension.  
 Wilbraham, Underpass, Boston & Albany Railroad, 63.32-foot solid floor plate girder.

*Examinations, Reports, Estimates, etc., at Request of Cities and Towns.**Town, Locality and Character of Work.*

- Barre, Over Ware River, Plans prepared for wood block floor.  
 Chester, Over West Branch of Westfield River, On condition of iron bridge and advice on repairs.  
 Cohasset, Over Gulf River, On condition of steel bridge and advice on repairs.  
 Cohasset, Over Little Harbor, On condition of steel bridge and advice on repairs.  
 Cummington (West), Over Westfield River, Relocation of 50-foot iron truss.  
 Eastham, Over Boat Meadow River, Plans and specifications prepared and construction supervised for wooden pile bridge.  
 Framingham, Over Bannister Brook, On condition of bridges and advice on reconstruction.  
 Great Barrington, Over Alford Stream, On condition of iron bridge.  
 Great Barrington, Over Alford Stream, On condition of wooden bridge.  
 Great Barrington, Over Housatonic River, On condition of four iron bridges.  
 Hinsdale, Over Housatonic River, On condition of eight iron bridges.  
 Hudson, Over Assabet River, On condition of bridge and advice on reconstruction.  
 Lancaster, Over Nashua River, On condition of eight iron bridges.  
 Norwood, Over Neponset River, Advice on reconstruction.  
 North Adams, Over Hoosic River, On condition of 69.5 ft. iron truss.  
 Orange, Over Millers River, Advice on condition to stone arch.  
 Orange, Over Brook, Advice on reconstruction.  
 Palmer-Monson, Over Quaboag River, On condition of bridge and advice on reconstruction.  
 Plymouth, Over Town Brook, On strength of reconstruction.  
 Plympton, Over Wenetuxet River, Advice on reconstruction.  
 Royalston, Over Millers River, Advice and supervision on reconstruction.  
 Russell, Over Westfield River, Advice on construction of concrete arch.  
 Sandisfield, Over Farmington River, Advice on condition of two iron bridges.  
 Southwick, Over Great Brook, Advice on reconstruction of stone arch.  
 Southwick, Over Canal, Advice on reconstruction of culvert.  
 Townsend, Over Squannacook River, Advice, plans, and specifications on reconstruction of two concrete beam bridges.  
 West Medway, Over Chicken Brook, Estimates for reconstruction of two bridges.  
 West Stockbridge, Over Williams River, On condition of 2 iron bridges.  
 West Stockbridge, Over State Line Brook, On condition of iron bridge.  
 Whately, Over Mill River, On condition of iron bridge.  
 Wilbraham-Ludlow, Over Chicopee River, On condition of wooden truss bridge.

*Examinations, Reports, Estimates, etc., at Request of Other Departments.**City, Locality and Character of Work.*

- Taunton, County Street Bridge, Over Taunton River, Strength of 62-foot concrete arch.

*Other Examinations and Reports.**Cities and Towns, Locality and Subject.*

- Andover, Sta. 29+ on Main Street, Estimate made for concrete conduit.  
 Erving, Sta. 14+40 to Sta. 17+50, Rubble concrete retaining wall.  
 Essex, Sta. 13 to Sta. 17, Sea wall and riprap.  
 Grafton, Over New York, New Haven & Hartford Railroad, Strength of wood truss.  
 North Adams, Over Hoosic River, 2-span concrete beam estimate.  
 Norton, Over Wading River, Estimate and plan for repairs to 34.5-foot plate girder.  
 Palmer, Over Southern New England Railroad, Estimate for superstructure.



Provincetown, Estimate for sea wall and riprap.

Sheffield, Over Housatonic River, Strength of iron bridge.

Wareham, Over Agawam River, Strength of wooden bridge.

Wareham, Over Cape Cod Division, New York, New Haven & Hartford Railroad, Alteration of plate girder.

Williamsburg, Over Mill River, 40-foot concrete beam.

Williamsburg, Over Mill River, Strength of steel bridge and estimate for 60 foot concrete arch.

Williamstown, Over Brook, On strength of 27.5-foot I beams.

Chapter 85, General Laws was amended by section 1, chapter 313, Acts of 1923 relative to the protection of highway bridges from heavy loads, by striking out section thirty-four and inserting in place thereof the following: — "*Section 34.* Except as otherwise provided in the following section, the division, person or local authorities having control of any bridge on any road may maintain notices at each end of such bridge legible at a distance of fifty feet, stating the maximum weight of vehicle with load which the bridge will safely carry to be six tons or over."

During the year the Division brought to the attention of the various local authorities the provisions of this law.

Said chapter 85 was further amended by section 2 of said chapter 313, Acts of 1923, by adding at the end thereof the following new section: — "*Section 35.* No bridge on a public highway having a span in excess of ten feet, except a bridge constructed under the provisions of chapter one hundred and fifty-nine, shall be constructed or reconstructed by any county or town except in accordance with plans and specifications therefor approved by the division. Said division shall approve or alter to meet its approval all such plans submitted to it and shall determine the maximum load which any such bridge may safely carry, and the division or the local authorities having control of such bridge may maintain notices at each end thereof, legible at a distance of fifty feet, stating the maximum weight of vehicle with load which the bridge will safely carry. The owner of a vehicle operated on any bridge posted under this or the preceding section shall be responsible for all damage resulting thereto if the weight of the vehicle and load exceeds the maximum load as posted under this or the preceding section, as the case may be, and the amount of the damage may be recovered in an action at law by the person or authorities charged with the maintenance of the bridge. Any person operating a vehicle, the weight of which with its load exceeds the maximum weight as posted under this or the preceding section, that causes damage to a bridge so posted shall be punished by a fine of not more than two hundred dollars."

Under this provision of law the Division has approved plans for bridges as follows: —

*City or Town, Location, Character of Work and Date of Approval.*

North Adams, Over South Branch of Hoosic River at Hodge Cross Road, Concrete viaduct, approved Sept. 11, 1923.

Pittsfield, Over Housatonic River at Pontoosac Avenue, 40.75 foot plate girder and concrete slab, approved Oct. 9, 1923.

Leicester, Over pond at Chapel Street, One 10-foot and two 5-foot concrete slabs, approved Oct. 30, 1923.

Northampton, Over Mill River at Clement Street, 94.75 foot truss, approved Oct. 30, 1923.

BRIDGE OVER THE MERRIMACK RIVER BETWEEN NEWBURYPORT AND SALISBURY.

The charge of this bridge was placed in the Massachusetts Highway Commission, and the same made a State highway by the provisions of chapter 716, Acts of 1912, which also provided that the expense of keeping the bridge in good repair for travel, of operating the draw and of maintaining the bridge shall be paid by the Commonwealth.



The number of draw openings during the year ending Nov. 30, 1923, was 288. In 1921 they amounted to 312, and in 1922 to 276.

The total expenditures during the year ending Nov. 30, 1923, were \$24,476.95. The total expenditures from 1912 to Nov. 30, 1923, inclusive were \$102,900.33.

BRIDGE OVER TAUNTON GREAT RIVER BETWEEN FALL RIVER AND SOMERSET.

The charge of this bridge was placed in the Massachusetts Highway Commission, and the same made a State highway by the provisions of chapter 717, Acts of 1912, which also provided that the expense of keeping the bridge in good repair for travel, and of operating the draw and maintaining the bridge shall be paid by the Commonwealth.

At the date of this report the reconstruction of the fender piers, under contract, was nearing completion.

The number of draw openings during the year ending Nov. 30, 1923, was 2,258. In 1921 they amounted to 2,387, and in 1922 to 2,083.

The total expenditures during the year ending Nov. 30, 1923, were \$27,-342.79.

The total expenditures from 1912 to Nov. 30, 1923, inclusive were \$196,904.49.

SLADES FERRY BRIDGE, IN FALL RIVER.

Chapter 14, Resolves of 1923, provided that the departments of public works and public utilities, acting jointly, should investigate the expediency and cost of rebuilding this bridge; the expediency and cost of maintaining the same in part by the Commonwealth as part of a State highway; the expediency and cost of enlarging the present draw, etc.

A report, under date of May 1, 1923, was made to the General Court, and printed as House No. 1504.

CONSTRUCTION OF TOWN AND COUNTY WAYS.

(Section 34, chapter 90, General Laws, as revised by section 1, chapter 112, Acts of 1921.)

During the year the Division has contracted for work to be done in the towns named in the following table, which also shows the type of road, the length contracted for, and the allotments or contributions by the State, towns and counties: —

COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
<i>Barnstable County.</i>					
Bourne . . . . .	\$5,000 00	\$5,000 00	\$5,000 00	Bituminous concrete . . . .	2,050
Brewster . . . . .	556 00	556 00	—	Repairs and oiling . . . .	13,154
Harwich . . . . .	6,000 00	6,000 00	—	Bituminous concrete . . . .	8,070
Mashpee . . . . .	1,000 00	—	1,000 00	Repairs and oiling . . . .	20,259
Mashpee . . . . .	3,000 00	—	3,000 00	Bituminous concrete . . . .	1,300
Sandwich . . . . .	10,000 00	10,000 00	10,000 00	Bituminous concrete . . . .	8,030
Yarmouth . . . . .	15,000 00	22,400 00	—	Bituminous concrete . . . .	11,515
Yarmouth . . . . .	1,100 00	1,100 00	—	Repairs and oiling . . . .	9,120
<i>Berkshire County.</i>					
Adams . . . . .	30,000 00	45,000 00	—	Cement concrete . . . . .	4,390
Alford . . . . .	500 00	500 00	500 00	Gravel . . . . .	375
Cheshire . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	13,829
Hancock . . . . .	2,000 00	—	2,000 00	Gravel . . . . .	5,000
Mount Washington . . . . .	500 00	500 00	500 00	Gravel . . . . .	400
New Marlborough . . . . .	3,000 00	1,000 00	2,000 00	Gravel . . . . .	2,900
New Marlborough . . . . .	1,000 00	2,000 00	1,000 00	Gravel . . . . .	2,500
New Marlborough . . . . .	500 00	500 00	—	Gravel . . . . .	700
Otis . . . . .	500 00	500 00	500 00	Gravel . . . . .	800
Peru . . . . .	500 00	—	500 00	Gravel . . . . .	350
Richmond . . . . .	2,000 00	1,000 00	—	Gravel . . . . .	500
Richmond . . . . .	1,500 00	—	—	Gravel . . . . .	209
Richmond . . . . .	400 00	350 00	—	Repairs and oiling . . . .	10,800
Savoy . . . . .	2,500 00	—	2,500 00	Gravel . . . . .	16,368
Sheffield . . . . .	1,000 00	1,000 00	1,000 00	Repairs and oiling . . . .	16,100

COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
<i>Berkshire County—Con.</i>					
Stockbridge . . . . .	\$25,000 00	—	—	Bituminous macadam . . . . .	2,600
Tyringham . . . . .	1,000 00	\$1,000 00	\$1,000 00	Gravel . . . . .	850
Washington . . . . .	1,000 00	1,000 00	500 00	Gravel . . . . .	700
West Stockbridge . . . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	1,900
Windsor . . . . .	500 00	—	500 00	Gravel . . . . .	500
<i>Bristol County.</i>					
Acushnet . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam . . . . .	2,075
Acushnet . . . . .	500 00	500 00	—	Repairs and oiling . . . . .	13,200
Berkley . . . . .	1,500 00	1,500 00	—	Repairs and oiling . . . . .	33,205
Dartmouth . . . . .	5,000 00	5,000 00	—	Bituminous macadam . . . . .	3,370
Easton . . . . .	5,000 00	5,000 00	—	Bituminous concrete . . . . .	1,602
Fairhaven . . . . .	6,000 00	6,000 00	6,000 00	Bituminous macadam . . . . .	2,250
Freetown . . . . .	500 00	500 00	500 00	Repairs . . . . .	16,869
Raynham . . . . .	5,000 00	3,000 00	5,000 00	Bituminous macadam . . . . .	1,750
Rehoboth . . . . .	3,000 00	3,000 00	3,000 00	Waterbound macadam . . . . .	2,400
Swansea . . . . .	3,000 00	3,000 00	6,000 00	Bituminous macadam . . . . .	2,400
<i>Essex County.</i>					
Amesbury . . . . .	10,750 00	10,750 00	10,750 00	Bituminous macadam . . . . .	5,250
Andover . . . . .	8,000 00	8,000 00	8,000 00	Cement concrete . . . . .	1,700
Boxford . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	2,000
Boxford . . . . .	1,200 00	1,200 00	1,200 00	Gravel . . . . .	1,550
Danvers . . . . .	3,500 00	3,500 00	3,500 00	Bituminous macadam . . . . .	1,300
Essex . . . . .	2,500 00	2,500 00	—	Repairs and oiling . . . . .	41,289
Georgetown . . . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	4,130
Ipswich . . . . .	1,150 00	1,150 00	—	Repairs and oiling . . . . .	10,600
Merrimac . . . . .	5,200 00	4,700 00	5,200 00	Bituminous macadam . . . . .	2,238
Methuen . . . . .	7,000 00	7,000 00	7,000 00	Bituminous macadam . . . . .	3,400
Rockport . . . . .	45,000 00	—	—	Bituminous macadam . . . . .	8,700
Saugus . . . . .	8,000 00	8,000 00	8,000 00	Bituminous macadam . . . . .	3,200
Wenham . . . . .	400 00	400 00	—	Repairs and oiling . . . . .	8,448
<i>Franklin County.</i>					
Ashfield . . . . .	1,000 00	1,000 00	—	Gravel . . . . .	800
Ashfield . . . . .	1,500 00	1,500 00	—	Gravel . . . . .	1,400
Ashfield . . . . .	1,500 00	1,500 00	—	Gravel . . . . .	1,150
Buckland . . . . .	2,000 00	2,000 00	—	Gravel . . . . .	1,400
Buckland . . . . .	1,500 00	1,500 00	—	Gravel . . . . .	1,500
Conway . . . . .	5,000 00	—	—	Gravel . . . . .	15,840
Conway . . . . .	1,000 00	1,000 00	—	Gravel . . . . .	1,000
Leverett . . . . .	500 00	500 00	—	Gravel . . . . .	800
Monroe . . . . .	1,500 00	1,500 00	—	Gravel . . . . .	2,500
Montague . . . . .	1,500 00	1,500 00	—	Gravel . . . . .	2,000
New Salem . . . . .	5,000 00	—	—	Gravel . . . . .	3,520
Orange . . . . .	1,000 00	1,000 00	—	Gravel . . . . .	1,500
Shutesbury . . . . .	500 00	500 00	—	Gravel . . . . .	800
Warwick . . . . .	800 00	800 00	—	Gravel . . . . .	850
Wendell . . . . .	225 00	225 00	—	Gravel . . . . .	200
Whately . . . . .	3,000 00	3,000 00	—	Gravel . . . . .	1,750
<i>Hampden County.</i>					
Blandford . . . . .	6,000 00	1,000 00	5,000 00	Gravel . . . . .	29,568
Chester . . . . .	1,000 00	500 00	1,000 00	Gravel . . . . .	1,050
Chester . . . . .	500 00	—	500 00	Gravel . . . . .	800
East Longmeadow . . . . .	4,000 00	4,000 00	—	Bituminous macadam . . . . .	2,500
Granville . . . . .	1,000 00	500 00	1,000 00	Gravel . . . . .	800
Hampden . . . . .	1,000 00	1,000 00	—	Gravel . . . . .	1,050
Longmeadow . . . . .	35,000 00	20,000 00	20,000 00	Cement concrete . . . . .	4,712
Southwick . . . . .	500 00	500 00	—	Gravel . . . . .	450
Tolland . . . . .	700 00	500 00	700 00	Gravel . . . . .	17,424
<i>Hampshire County.</i>					
Belchertown . . . . .	3,200 00	3,200 00	2,000 00	Gravel . . . . .	3,800
Easthampton . . . . .	12,000 00	12,000 00	12,000 00	Bituminous macadam . . . . .	5,830
Pelham . . . . .	300 00	300 00	300 00	Gravel . . . . .	850
Pelham . . . . .	700 00	—	—	Repairs . . . . .	5,000
Plainfield . . . . .	2,000 00	—	—	Repairs . . . . .	5,280
Prescott . . . . .	400 00	400 00	400 00	Gravel . . . . .	600
Worthington . . . . .	300 00	600 00	300 00	Gravel . . . . .	500
<i>Middlesex County.</i>					
Acton . . . . .	6,000 00	6,000 00	6,000 00	Bituminous macadam . . . . .	2,300
Arlington . . . . .	22,500 00	22,500 00	22,500 00	Asphaltic concrete . . . . .	6,400
Ayer . . . . .	11,000 00	11,000 00	11,000 00	Bituminous macadam . . . . .	5,337
Billerica . . . . .	10,000 00	10,000 00	10,000 00	Bituminous macadam . . . . .	5,600
Boxborough . . . . .	500 00	500 00	500 00	Gravel . . . . .	1,000
Burlington . . . . .	1,600 00	1,600 00	—	Repairs and oiling . . . . .	24,235
Burlington . . . . .	4,000 00	2,000 00	4,000 00	Gravel . . . . .	3,000
Chelmsford . . . . .	6,000 00	6,000 00	6,000 00	Bituminous macadam . . . . .	3,200



COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
<i>Middlesex County—Con.</i>					
Chelmsford . . . . .	\$7,500 00	\$7,500 00	\$7,500 00	Bituminous macadam . . . . .	5,200
Dracut . . . . .	2,000 00	2,000 00	2,000 00	Bituminous macadam . . . . .	750
Dracut . . . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam . . . . .	1,400
Dunstable . . . . .	1,750 00	1,750 00	1,750 00	Repairs and oiling . . . . .	38,016
Framingham . . . . .	17,500 00	17,500 00	17,500 00	Bituminous macadam . . . . .	7,600
Holliston . . . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	2,150
Hopkinton . . . . .	4,500 00	4,500 00	4,500 00	Waterbound macadam . . . . .	3,500
Lincoln . . . . .	7,500 00	7,500 00	7,500 00	Bituminous macadam . . . . .	2,350
Littleton . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	3,000
Littleton . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	2,000
Maynard . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam . . . . .	3,400
Natick . . . . .	4,000 00	4,000 00	4,000 00	Bituminous macadam . . . . .	1,750
North Reading . . . . .	350 00	350 00	350 00	Waterbound macadam . . . . .	450
North Reading . . . . .	1,200 00	1,200 00	1,200 00	Repairs and oiling . . . . .	48,840
Pepperell . . . . .	700 00	700 00	700 00	Repairs and oiling . . . . .	15,250
Pepperell . . . . .	600 00	600 00	600 00	Gravel . . . . .	700
Reading . . . . .	2,000 00	2,000 00	2,000 00	Bituminous macadam . . . . .	600
Sherborn . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	2,300
Sudbury . . . . .	2,500 00	2,500 00	2,500 00	Gravel . . . . .	4,000
Sudbury . . . . .	2,300 00	2,300 00	2,300 00	Repairs and oiling . . . . .	41,712
Tewksbury . . . . .	500 00	500 00	500 00	Repairs and oiling . . . . .	9,000
Tyngsborough . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	3,800
Tyngsborough . . . . .	500 00	500 00	500 00	Repairs and oiling . . . . .	23,760
Wakefield . . . . .	4,000 00	4,000 00	4,000 00	Bituminous macadam . . . . .	2,500
Wakefield . . . . .	9,000 00	18,000 00	9,000 00	Bituminous macadam . . . . .	6,050
Wayland . . . . .	3,000 00	3,000 00	3,000 00	Repairs and oiling . . . . .	55,440
Westford . . . . .	1,100 00	1,100 00	1,100 00	Repairs and oiling . . . . .	32,000
Weston . . . . .	15,000 00	15,000 00	15,000 00	Bituminous macadam . . . . .	10,000
Wilmington . . . . .	2,000 00	2,000 00	2,000 00	Waterbound macadam . . . . .	1,800
Wilmington . . . . .	500 00	500 00	500 00	Repairs and oiling . . . . .	10,222
<i>Nantucket County.</i>					
Nantucket . . . . .	7,500 00	5,900 00	—	Bituminous concrete . . . . .	5,700
<i>Norfolk County.</i>					
Bellingham . . . . .	2,000 00	1,000 00	2,000 00	Gravel . . . . .	3,000
Bellingham . . . . .	1,000 00	—	1,000 00	Repairs and oiling . . . . .	23,760
Canton . . . . .	8,000 00	8,000 00	8,000 00	Bituminous macadam . . . . .	2,750
Dedham . . . . .	4,000 00	7,000 00	4,000 00	Bituminous macadam . . . . .	3,850
Franklin . . . . .	5,000 00	5,000 00	5,000 00	Gravel . . . . .	4,687
Holbrook . . . . .	1,500 00	1,500 00	1,500 00	Bituminous macadam . . . . .	686
Holbrook . . . . .	3,500 00	3,500 00	3,500 00	Bituminous macadam . . . . .	1,385
Medfield . . . . .	1,000 00	1,000 00	1,000 00	Repairs and oiling . . . . .	16,632
Medway . . . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	1,200
Medway . . . . .	1,000 00	1,000 00	1,000 00	Repairs and oiling . . . . .	17,160
Millis . . . . .	1,000 00	1,000 00	1,000 00	Repairs and oiling . . . . .	19,700
Millis . . . . .	3,500 00	3,000 00	3,500 00	Gravel . . . . .	2,827
Norfolk . . . . .	3,000 00	3,000 00	3,000 00	Gravel . . . . .	3,100
Randolph . . . . .	5,000 00	7,500 00	7,500 00	Bituminous macadam . . . . .	2,705
Sharon . . . . .	6,500 00	6,500 00	6,500 00	Bituminous macadam . . . . .	1,750
Stoughton . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam . . . . .	1,954
Westwood . . . . .	8,000 00	8,000 00	8,000 00	Bituminous macadam . . . . .	3,600
Wrentham . . . . .	3,000 00	3,000 00	3,000 00	Bituminous macadam . . . . .	1,240
Wrentham . . . . .	500 00	500 00	500 00	Bituminous macadam . . . . .	260
<i>Plymouth County.</i>					
Bridgewater . . . . .	2,000 00	500 00	—	Repairs and oiling . . . . .	16,200
Carver . . . . .	4,500 00	4,500 00	2,500 00	Bituminous concrete . . . . .	6,600
East Bridgewater . . . . .	3,000 00	3,000 00	3,000 00	Gravel . . . . .	5,290
Hanson . . . . .	1,100 00	1,100 00	1,100 00	Bituminous macadam . . . . .	650
Kingston . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam and gravel . . . . .	6,075
Lakeville . . . . .	500 00	500 00	500 00	Repairs . . . . .	10,600
Middleborough . . . . .	5,000 00	5,000 00	—	Bituminous concrete . . . . .	2,800
Pembroke . . . . .	4,200 00	4,200 00	4,200 00	Gravel . . . . .	12,150
Rochester . . . . .	2,500 00	2,500 00	2,500 00	Repairs and oiling . . . . .	15,850
West Bridgewater . . . . .	11,000 00	11,000 00	11,000 00	Bituminous concrete . . . . .	6,580
Whitman . . . . .	2,000 00	2,000 00	2,000 00	Bituminous macadam . . . . .	975
Wrentham . . . . .	1,800 00	—	—	Grading and repairs . . . . .	350
<i>Worcester County.</i>					
Berlin . . . . .	4,000 00	3,000 00	4,000 00	Bituminous macadam . . . . .	5,500
Bolton . . . . .	500 00	500 00	500 00	Repairs and oiling . . . . .	11,616
Boylston . . . . .	2,000 00	2,000 00	2,000 00	Repairs and oiling . . . . .	38,016
Dana . . . . .	1,500 00	700 00	1,500 00	Gravel . . . . .	2,000
Dudley . . . . .	800 00	800 00	—	Repairs and oiling . . . . .	13,522
Grafton . . . . .	6,000 00	6,000 00	6,000 00	Bituminous macadam . . . . .	2,700
Grafton . . . . .	15,000 00	—	5,000 00	Cement concrete and bitumi- nous macadam . . . . .	2,256
Harvard . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam . . . . .	2,200



COUNTIES AND TOWNS.	CONTRIBUTIONS.			Type of Road.	Length Con- tracted for (Feet).
	State.	Town.	County.		
<i>Worcester County — Con.</i>					
Hubbardston . . . . .	\$1,000 00	\$500 00	\$1,000 00	Gravel . . . . .	1,200
Leicester . . . . .	650 00	650 00	650 00	Bituminous macadam . . . . .	2,500
Lunenburg . . . . .	3,500 00	3,500 00	3,500 00	Bituminous macadam . . . . .	10,320
Mendon . . . . .	500 00	500 00	500 00	Bituminous macadam . . . . .	1,500
Milford . . . . .	12,000 00	12,000 00	12,000 00	Bituminous macadam . . . . .	5,000
Milford . . . . .	1,400 00	1,400 00	1,400 00	Bituminous macadam . . . . .	600
New Braintree . . . . .	6,500 00	2,200 00	6,500 00	Bituminous macadam . . . . .	2,350
Northborough . . . . .	10,000 00	10,000 00	10,000 00	Bituminous macadam . . . . .	3,600
Oxford . . . . .	1,000 00	1,000 00	—	Repairs and oiling . . . . .	7,318
Paxton . . . . .	3,000 00	2,000 00	3,000 00	Gravel . . . . .	3,000
Petersham . . . . .	2,000 00	2,000 00	2,000 00	Gravel . . . . .	3,000
Phillipston . . . . .	1,000 00	500 00	1,000 00	Gravel . . . . .	1,000
Princeton . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	1,500
Princeton . . . . .	1,000 00	1,000 00	1,000 00	Gravel . . . . .	1,000
Royalston . . . . .	1,000 00	500 00	1,000 00	Gravel . . . . .	850
Rutland . . . . .	500 00	500 00	500 00	Gravel . . . . .	600
Rutland . . . . .	500 00	500 00	—	Gravel . . . . .	730
Shrewsbury . . . . .	5,000 00	5,000 00	5,000 00	Bituminous macadam . . . . .	2,200
Spencer . . . . .	5,000 00	5,000 00	5,000 00	Gravel . . . . .	4,350
Sterling . . . . .	2,000 00	1,000 00	2,000 00	Gravel . . . . .	1,970
Templeton . . . . .	3,000 00	3,000 00	3,000 00	Gravel . . . . .	940
Templeton . . . . .	7,000 00	3,500 00	3,500 00	Bituminous macadam . . . . .	1,613
Westborough . . . . .	10,000 00	10,000 00	10,000 00	Bituminous macadam . . . . .	3,950
Westminster . . . . .	3,000 00	2,000 00	3,000 00	Gravel . . . . .	4,575

The expenditures during the year in various counties were: —

Barnstable, \$28,962.44	Hampshire, \$16,400.07
Berkshire, \$94,141.46	Middlesex, \$161,502.29
Bristol, \$25,228.64	Nantucket, \$5,950.72
Dukes, \$484.71	Norfolk, \$63,728.37
Essex, \$89,400.08	Plymouth, \$36,190.09
Franklin, \$48,637.66	Worcester, \$210,692.68
Hampden, \$107,748.13	Total, \$889,067.34

Details of the foregoing expenditures follow: —

*Barnstable.* — Bourne, \$935.97; Brewster, \$549.06; Falmouth, \$475.13; Harwich, \$6,140.17; Mashpee, \$1,077.22; Yarmouth, \$19,784.89.

*Berkshire County.* — Adams, \$25,853.35; Alford, \$538.61; Cheshire, \$1,077.22; Hancock, \$2,154.45; Hinsdale, \$5,014.80; Lanesborough, \$12,783.84; Monterey, \$7,833.17; Mt. Washington, \$538.61; New Marlborough, \$4,847.50; Otis, \$6,528.04; Peru, \$5,986.85; Richmond, \$4,201.17; Savoy, \$2,693.06; Sheffield, \$1,077.22; Stockbridge, \$8,166.07; Tyringham, \$1,077.22; Washington, \$1,077.22; West Stockbridge, \$2,154.45; Windsor, \$538.61.

*Bristol County.* — Acushnet, \$5,924.73; Berkley, \$1,615.83; Dartmouth, \$5,386.12; Fairhaven, \$3,600.10; Freetown, \$181.94; Raynham, \$5,386.12; Swansea, \$3,133.80.

*Dukes County.* — Chilmark, \$484.71.

*Essex County.* — Amesbury, \$16,942.67; Andover, \$8,079.17; Boxford, \$2,369.89; Danvers, \$13,568.08; Essex, \$2,693.05; Georgetown, \$2,154.45; Ipswich, \$1,053.31; Merrimac, \$5,186.53; Methuen, \$10,622.67; Middleton, \$180.80; Rockport, \$18,334.77; Saugus, \$7,783.80; Wenham, \$430.89.

*Franklin County.* — Ashfield, \$23,862.77; Buckland, \$5,924.73; Conway, \$1,076.71; Leverett, \$538.61; Montague, \$3,770.28; New Salem, \$5,385.38; Orange, \$1,077.22; Shutesbury, \$538.61; Warwick, \$861.78; Wendell, \$242.38; Whately, \$5,359.19.

*Hampden County.* — Blandford, \$6,463.34; Brimfield, \$966.29; Chester, \$1,615.83; East Longmeadow, \$4,308.89; Holyoke, \$34,551.11; Longmeadow, \$41,843.92; Southwick, \$538.61; Tolland, \$754.06; Westfield, \$1,753.67; West Springfield, \$14,952.41.

*Hampshire County.* — Easthampton, \$10,772.23; Huntington, \$1,258.04; Pelham, \$1,077.22; Plainfield, \$2,154.45; Prescott, \$428.78; Ware, \$386.18; Worthington, \$323.17.

*Middlesex County.* — Acton, \$6,463.33; Arlington, \$9,371.84; Ashby, \$679.04; Ashland, \$1,184.95; Ayer, \$10,772.23; Billerica, \$7,540.56; Boxborough, \$538.61; Burlington, \$5,493.84; Chelmsford, \$14,896.92; Dracut, \$4,264.21; Dunstable, \$1,885.14; Framingham, \$16,158.35; Holliston, \$3,020.22; Hopkinton, \$4,847.50; Lexington, \$5,622.12; Lincoln, \$6,620.51; Littleton, \$2,154.45; Maynard, \$6,734.70; Natick, \$4,308.89; North Reading, \$1,669.70; Pepperell, \$1,400.39; Sherborn, \$1,077.22; Shirley, \$4,570.33; Sudbury, \$7,756.01; Tewksbury, \$538.61; Tyngsborough, \$1,615.83; Wakefield, \$13,680.73; Wayland, \$3,231.67; Westford, \$1,184.95; Weston, \$9,587.29; Wilmington, \$2,632.15.

*Nantucket County.* — Nantucket, \$5,950.72.

*Norfolk County.* — Bellingham, \$3,231.67; Canton, \$6,482.73; Dedham, \$3,939.34; Foxborough, \$5,184.01; Franklin, \$5,386.12; Holbrook, \$4,407.35; Medfield, \$1,077.22; Medway, \$3,231.67; Millis, \$5,178.44; Norfolk, \$3,231.67; Sharon, \$6,889.83; Stoughton, \$8.62; Westwood, \$12,279.59; Wrentham, \$3,200.11.

*Plymouth County.* — Bridgewater, \$2,153.86; Carver, \$4,845.34; Hanson, \$1,162.84; Kingston, \$5,383.38; Lakeville, \$152.99; Middleborough, \$5,210.19; Norwell, \$5,386.12; Pembroke, \$4,524.33; Plymouth, \$2,635.78; Rochester, \$2,692.98; Whitman, \$2,042.28.

*Worcester County.* — Ashburnham, \$26,990.17; Berlin, \$7,028.88; Bolton, \$538.61; Boylston, \$4,308.89; Dana, \$1,615.83; Dudley, \$861.78; Grafton, \$25,057.85; Harvard, \$4,379.08; Holden, \$34,068.29; Hubbardston, \$1,077.22; Leicester, \$9,494.45; Mendon, \$538.61; Milford, \$10,186.12; New Braintree, \$7,983.23; Northborough, \$6,663.00; Oxford, \$1,077.22; Paxton, \$5,386.12; Petersham, \$2,154.45; Phillipston, \$1,077.22; Princeton, \$1,615.83; Royalston, \$332.03; Rutland, \$295.44; Shrewsbury, \$5,386.12; Sterling, \$2,154.45; Sutton, \$32,316.69; West Brookfield, \$7,337.41; Westborough, \$8,944.67; Westminster, \$1,823.02.

## REPAIR AND IMPROVEMENT OF PUBLIC WAYS, EXCLUSIVE OF STATE HIGHWAYS, IN CERTAIN TOWNS.

(Sections 26 to 29 and 31 of chapter 81, General Laws, as amended with reference to section 26 by section 1 of chapter 120, Acts of 1921, and by chapter 281, Acts of 1922.)

During the year the Division has contracted for work to be done in the towns named in the following table, which also shows the allotments or contributions by the State and towns:—

Counties and Towns.	Allotments.	
	State.	Town.
<b>Barnstable County:</b>		
Dennis . . . . .	\$5,925 00	\$5,925 00
Eastham . . . . .	2,925 00	1,950 00
Mashpee . . . . .	3,525 00	1,880 00
Sandwich . . . . .	5,325 00	5,325 00
Truro . . . . .	4,650 00	2,480 00
Wellfleet . . . . .	2,625 00	3,500 00
<b>Berkshire County:</b>		
Alford . . . . .	1,500 00	800 00
Becket . . . . .	4,500 00	3,000 00
Cheshire . . . . .	3,150 00	4,200 00
Florida . . . . .	3,150 00	4,200 00
Hancock . . . . .	2,250 00	1,500 00
Hinsdale . . . . .	2,700 00	2,700 00
Lanesborough . . . . .	3,075 00	3,075 00
Monterey . . . . .	3,900 00	2,080 00
Mount Washington . . . . .	1,500 00	800 00
New Ashford . . . . .	675 00	360 00
New Marlborough . . . . .	6,375 00	4,250 00
Otis . . . . .	4,200 00	1,400 00
Peru . . . . .	2,775 00	925 00



Counties and Towns.	Allotments.	
	State.	Town.
<b>Berkshire County — <i>Concluded.</i></b>		
Richmond . . . . .	\$2,700 00	\$1,800 00
Sandisfield . . . . .	6,525 00	1,305 00
Savoy . . . . .	4,200 00	840 00
Sheffield . . . . .	5,775 00	5,775 00
Tyringham . . . . .	1,875 00	1,875 00
Washington . . . . .	3,750 00	750 00
West Stockbridge . . . . .	2,850 00	2,850 00
Windsor . . . . .	4,950 00	990 00
<b>Bristol County:</b>		
Berkley . . . . .	3,225 00	2,150 00
Freetown . . . . .	3,900 00	5,200 00
Norton . . . . .	4,275 00	7,125 00
Raynham . . . . .	3,300 00	4,400 00
Rehoboth . . . . .	8,025 00	5,350 00
Swansea . . . . .	3,450 00	6,900 00
<b>Essex County:</b>		
Boxford . . . . .	3,825 00	3,825 00
Georgetown . . . . .	2,400 00	4,000 00
Groveland . . . . .	2,250 00	4,500 00
Merrimac . . . . .	2,625 00	5,250 00
Middleton . . . . .	2,100 00	3,500 00
Rowley . . . . .	2,700 00	3,600 00
West Newbury . . . . .	2,775 00	3,700 00
<b>Franklin County:</b>		
Ashfield . . . . .	6,150 00	3,280 00
Bernardston . . . . .	3,075 00	2,050 00
Charlemont . . . . .	3,750 00	2,500 00
Colrain . . . . .	6,375 00	6,375 00
Conway . . . . .	5,550 00	2,960 00
Gill . . . . .	2,700 00	2,700 00
Hawley . . . . .	3,675 00	735 00
Heath . . . . .	4,050 00	1,350 00
Leverett . . . . .	2,850 00	1,520 00
Leyden . . . . .	3,075 00	1,025 00
Monroe . . . . .	1,350 00	1,800 00
New Salem . . . . .	4,800 00	1,600 00
Northfield . . . . .	5,400 00	5,400 00
Rowe . . . . .	3,075 00	1,025 00
Shutesbury . . . . .	3,000 00	1,600 00
Sunderland . . . . .	2,550 00	3,400 00
Warwick . . . . .	4,200 00	2,240 00
Wendell . . . . .	3,525 00	3,525 00
Whately . . . . .	3,075 00	3,075 00
<b>Hampden County:</b>		
Blandford . . . . .	6,225 00	3,320 00
Brimfield . . . . .	4,800 00	3,200 00
Chester . . . . .	4,950 00	3,300 00
East Longmeadow . . . . .	2,850 00	5,700 00
Granville . . . . .	5,625 00	3,000 00
Hampden . . . . .	2,550 00	1,700 00
Holland . . . . .	2,250 00	450 00
Monson . . . . .	8,250 00	8,250 00
Montgomery . . . . .	2,100 00	700 00
Southwick . . . . .	3,750 00	5,000 00
Tolland . . . . .	3,150 00	1,050 00
Wales . . . . .	1,875 00	1,250 00
Wilbraham . . . . .	3,525 00	8,225 00



Counties and Towns.	Allotments.	
	State.	Town.
Hampshire County:		
Belchertown . . . . .	\$8,400 00	\$4,480 00
Chesterfield . . . . .	4,350 00	1,450 00
Cummington . . . . .	3,675 00	1,225 00
Enfield . . . . .	2,775 00	2,775 00
Goshen . . . . .	2,100 00	1,120 00
Granby . . . . .	3,450 00	3,450 00
Greenwich . . . . .	2,925 00	1,950 00
Huntington . . . . .	2,925 00	3,900 00
Middlefield . . . . .	2,700 00	900 00
Pelham . . . . .	3,000 00	2,000 00
Plainfield . . . . .	3,600 00	720 00
Prescott . . . . .	2,925 00	975 00
Southampton . . . . .	4,950 00	2,640 00
Westhampton . . . . .	3,600 00	1,200 00
Williamsburg . . . . .	3,150 00	4,200 00
Worthington . . . . .	5,325 00	1,775 00
Middlesex County:		
Acton . . . . .	5,100 00	8,500 00
Ashby . . . . .	4,275 00	4,275 00
Ashland . . . . .	3,225 00	6,450 00
Boxborough . . . . .	1,950 00	1,040 00
Carlisle . . . . .	4,500 00	2,400 00
Dunstable . . . . .	2,625 00	2,625 00
Holliston . . . . .	3,675 00	7,350 00
Hopkinton . . . . .	5,175 00	6,900 00
Lincoln . . . . .	3,075 00	6,150 00
Littleton . . . . .	3,075 00	5,125 00
North Reading . . . . .	2,775 00	4,625 00
Sherborn . . . . .	3,750 00	6,250 00
Shirley . . . . .	2,850 00	6,650 00
Stow . . . . .	3,375 00	4,500 00
Townsend . . . . .	4,800 00	6,400 00
Tyngsborough . . . . .	2,550 00	3,400 00
Wilmington . . . . .	3,225 00	7,525 00
Norfolk County:		
Bellingham . . . . .	3,075 00	5,125 00
Medfield . . . . .	3,000 00	7,000 00
Medway . . . . .	3,225 00	7,525 00
Norfolk . . . . .	3,075 00	4,100 00
Plymouth County:		
Carver . . . . .	5,025 00	6,700 00
Halifax . . . . .	2,400 00	3,200 00
Hanson . . . . .	2,550 00	5,950 00
Lakeville . . . . .	3,600 00	3,600 00
Norwell . . . . .	3,600 00	4,800 00
Pembroke . . . . .	3,975 00	3,975 00
Plympton . . . . .	2,550 00	1,700 00
Rochester . . . . .	3,600 00	3,600 00
Worcester County:		
Ashburnham . . . . .	5,775 00	5,775 00
Berlin . . . . .	2,925 00	2,925 00
Bolton . . . . .	3,975 00	2,650 00
Boylston . . . . .	3,000 00	2,000 00
Brookfield . . . . .	2,700 00	3,600 00
Charlton . . . . .	8,250 00	5,500 00
Dana . . . . .	3,300 00	2,200 00
Douglas . . . . .	5,250 00	7,000 00

Counties and Towns.	Allotments.	
	State.	Town.
<i>Worcester County — Concluded.</i>		
Harvard . . . . .	\$4,200 00	\$5,600 00
Holden . . . . .	5,775 00	7,700 00
Hubbardston . . . . .	5,625 00	3,750 00
Lunenburg . . . . .	4,875 00	4,875 00
Mendon . . . . .	2,850 00	2,850 00
New Braintree . . . . .	3,675 00	1,960 00
Northborough . . . . .	3,525 00	5,875 00
Oakham . . . . .	3,375 00	1,800 00
Paxton . . . . .	2,400 00	1,600 00
Petersham . . . . .	5,325 00	5,325 00
Phillipston . . . . .	3,075 00	1,640 00
Princeton . . . . .	5,400 00	3,600 00
Royalston . . . . .	5,025 00	3,350 00
Rutland . . . . .	5,400 00	3,600 00
Sterling . . . . .	5,550 00	5,550 00
Sturbridge . . . . .	5,925 00	3,950 00
Sutton . . . . .	6,375 00	6,375 00
Upton . . . . .	4,425 00	4,425 00
West Boylston . . . . .	4,125 00	4,125 00
Westminster . . . . .	5,775 00	3,850 00

The expenditures during 1923, in various counties, were: —

Barnstable, \$23,827.23	Hampshire, \$69,933.39
Berkshire, \$89,115.47	Middlesex, \$65,262.84
Bristol, \$29,028.88	Norfolk, \$14,696.87
Essex, \$23,728.76	Plymouth, \$24,516.16
Franklin, \$84,199.59	Worcester, \$149,008.04
Hampden, \$60,660.78	Total, \$633,978.01

Details of the foregoing expenditures follow: —

*Barnstable County.* — Dennis, \$3,444.11; Eastham, \$4,303.74; Mashpee, \$4,186.38; Truro, \$6,697.14; Wellfleet, \$5,195.86.

*Berkshire County.* — Alford, \$1,431.58; Becket, \$6,121.82; Cheshire, \$3,593.00; Egremont, \$275.13; Florida, \$3,204.95; Hancock, \$2,219.13; Hinsdale, \$3,318.65; Lanesborough, \$3,620.61; Monterey, \$4,714.53; Mt. Washington, \$1,891.64; New Ashford, \$801.65; New Marlborough, \$8,446.36; Otis, \$6,658.16; Peru, \$3,548.58; Richmond, \$3,206.59; Sandisfield, \$7,625.24; Savoy, \$4,988.03; Sheffield, \$6,753.12; Tyringham, \$2,429.23; Washington, \$4,853.93; West Stockbridge, \$3,574.06; Windsor, \$5,839.48.

*Bristol County.* — Berkley, \$3,830.09; Freetown, \$4,631.74; Norton, \$5,248.91; Raynham, \$1,452.61; Rehoboth, \$9,768.22; Swansea, \$4,097.31.

*Essex County.* — Boxford, \$4,370.46; Georgetown, \$2,850.30; Groveland, \$2,672.16; Merrimac, \$3,117.52; Middleton, \$1,900.20; Rowley, \$3,206.59; West Newbury, \$5,611.53.

*Franklin County.* — Ashfield, \$7,244.52; Bernardston, \$3,741.02; Charlemont, \$4,394.21; Colrain, \$7,808.64; Conway, \$6,471.44; Gill, \$3,058.14; Hawley, \$4,364.52; Heath, \$4,602.05; Leverett, \$2,286.18; Leyden, \$3,384.73; Monroe, \$1,365.77; New Salem, \$5,433.39; Northfield, \$6,351.87; Rowe, \$3,622.26; Shutesbury, \$3,325.35; Sunderland, \$3,295.64; Warwick, \$4,572.36; Wendell, \$4,097.31; Whately, \$4,780.19.

*Hampden County.* — Blandford, \$5,781.28; Brimfield, \$5,932.36; Chester, \$6,772.02; East Longmeadow, \$3,384.73; Granville, \$6,769.47; Hampden, \$2,969.06; Holland, \$2,870.88; Montgomery, \$2,475.18; Monson, \$8,943.80; Southwick, \$6,027.20; Tolland, \$2,475.76; Wales, \$2,322.66; Wilbraham, \$3,936.38.

*Hampshire County.* — Belchertown, \$9,324.29; Chesterfield, \$5,136.48; Cummington, \$4,364.52; Enfield, \$3,117.52; Goshen, \$2,850.30; Granby, \$3,800.40;



Greenwich, \$3,664.97; Huntington, \$3,344.12; Middlefield, \$3,160.58; Pelham, \$2,761.23; Plainfield, \$4,275.45; Prescott, \$3,473.81; Southampton, \$5,591.32; Westhampton, \$5,047.41; Williamsburg, \$3,626.38; Worthington, \$6,394.61.

*Middlesex County.* — Acton, \$6,097.38; Ashby, \$5,326.34; Ashland, \$4,320.58; Boxborough, \$1,319.40; Carlisle, \$5,146.88; Dunstable, \$1,701.07; Holliston, \$4,245.76; Hopkinton, \$5,755.37; Lincoln, \$3,325.35; Littleton, \$3,028.45; North Reading, \$1,068.86; Sherborn, \$4,275.45; Shirley, \$3,147.21; Stow, \$3,859.31; Townsend, \$5,742.60; Tyngsborough, \$3,339.95; Wilmington, \$3,562.88.

*Norfolk County.* — Bellingham, \$3,651.95; Medfield, \$3,562.88; Medway, \$3,830.09; Norfolk, \$3,651.95.

*Plymouth County.* — Carver, \$5,428.64; Halifax, \$2,850.30; Hanson, \$3,028.44; Lakeville, \$2,375.25; Norwell, \$4,275.46; Plympton, \$2,018.96; Rochester, \$4,539.11.

*Worcester County.* — Ashburnham, \$5,198.76; Berlin, \$3,902.98; Bolton, \$4,477.90; Boylston, \$3,457.45; Brookfield, \$3,505.27; Charlton, \$9,591.06; Dana, \$3,910.98; Douglas, \$6,684.85; Harvard, \$4,986.60; Holden, \$6,533.68; Hubbardston, \$7,136.16; Lunenburg, \$5,768.03; Mendon, \$2,678.84; New Braintree, \$4,595.01; Northborough, \$4,459.38; Oakham, \$3,934.71; Paxton, \$3,417.68; Petersham, \$6,378.67; Phillipston, \$3,405.04; Princeton, \$5,429.18; Royalston, \$6,220.25; Rutland, \$7,081.11; Sterling, \$6,177.04; Sturbridge, \$5,833.82; Sutton, \$7,547.03; Templeton, \$1,140.91; Upton, \$5,042.30; West Boylston, \$4,596.96; Westminster, \$5,916.39.

## STATE AID IN KEEPING CERTAIN HIGHWAYS OPEN DURING THE WINTER MONTHS.

Section 11, chapter 84, General Laws relating to the repair of ways and bridges, provides that the Department of Public Works may, by furnishing such equipment as it deems desirable and supervising the use of the same, cooperate with the proper officers of cities and towns in keeping open and reasonably passable for vehicles during the winter months certain highways. By section 2, chapter 120, Acts of 1921, section 11A was added to said chapter 84, and provides for the participation of the county in the repair and improvement of public ways.

Section 11, chapter 84 aforesaid was revised by section 2, chapter 482, Acts of 1923, relative to the removal of snow and ice from State and other highways.

Section 19, chapter 81, General Laws, relating to state highways, and section 85, chapter 161, General Laws, relating to the clearance of snow from its tracks by any street railway company, and the removal of such snow from public ways in which such tracks are located, were also revised by sections 1 and 3, respectively, of chapter 482 aforesaid.

In accordance with chapter 3, Resolves of 1923, providing for an investigation by the division of Highways into the question of snow and ice removal from highways, the Division filed its preliminary report under date of April 16, 1923, (printed as Senate No. 366) and its final report under date of November 15, 1923, (printed as House No. 42). The filing of this preliminary report was followed by the passage of said chapter 482, various sections thereof being referred to above.

The expenditure during the year ending Nov. 30, 1923, was \$58,118.92.

## DAMAGE CAUSED THE HIGHWAYS OF THE COMMONWEALTH DURING THE WINTER OF 1922-1923.

Chapter 85, General Laws, section 30, was revised by chapter 526, Acts of 1922 relative to the use of public ways by heavy vehicles and other heavy objects.

In accordance with an order of the Senate adopted March 29, 1923, "That the commissioner of public works be requested to investigate as to the extent of the damage caused the highways of the commonwealth during the past winter by trucks and other heavy vehicles and the probable cost of repairing said damage, and to report the results of such investigation to the Senate not later



than the twelfth day of April in the current year," a report under date of April 12, 1923, was made, and printed as Senate No. 358. Regulations were adopted by the Division, and public notice thereof given, providing that no person shall drive, operate, or move any vehicle or object, which with its load weighs more than ten thousand pounds, over certain State highways during the season of the year beginning April 2, 1923, and ending April 30, 1923, without a permit therefor.

In conformity with these regulations the Division issued 1,145 traffic permits.

## CONTRACTS FOR THE RECONSTRUCTION OF STATE HIGHWAYS IN ANTICIPATION OF AN APPROPRIATION.

By chapter 387, Acts of 1923, section 27, chapter 29, General Laws was amended by adding at the end thereof the following: "except that prior to the passage of the general appropriation act the division of highways of the department of public works, in anticipation of appropriations therefor, may in any fiscal year with the approval of the governor and council make contracts for the reconstruction of existing state highways binding the commonwealth to an amount not in excess of twenty-five per cent of the amount appropriated during the preceding fiscal year for the same purposes, such contracts to provide for the completion of the work thereunder within the fiscal year in which they are made."

In November, 1923, preparations were made for advertising contracts under the provisions of said section 27, as amended, for work to be done in various localities, preliminary to the making of contracts involving the expenditure by the Commonwealth of not exceeding \$725,000, this amount being twenty-five per cent of the appropriation of \$2,900,000 for the fiscal year ending Nov. 30, 1923. The making of these contracts as aforesaid was approved by the Governor and Council Nov. 30, 1923.

## THE REGULATION OF ADVERTISING SIGNS AND DEVICES WITHIN THE PUBLIC VIEW.

(Sections 29-33, Chapter 93, General Laws.)

*Legislation.*—By the provisions of Chapter 545 of the Acts of 1920, later consolidated in the General Laws, chapter 93, sections 29 to 33 inclusive, the Division of Highways was directed to make rules and regulations for the proper control and restriction of billboards and other advertising devices on public ways or on private property within public view of any highway, public park or reservation, and authorized, from time to time, to amend, repeal or add to said rules and regulations.

*Rules and Regulations.*—Rules and regulations were adopted by the Division in 1920, to be in force on and after Dec. 31, 1920, and were superseded by those adopted June 29, 1921 and which were in force July 1, 1921. Various questions having arisen with respect to the rules and regulations adopted in 1921, and still in force, public hearings were held in August and September, 1923 and certain changes suggested for consideration by the Division. Up to the date of this report no further rules and regulations have been adopted.

*Applications, Licenses and Permits.*—During the year ending Nov. 30, 1923, individuals, firms, associations and corporations to the number of 51 made applications and received licenses to engage in the business of advertising in the Commonwealth by means of outdoor advertising signs. Applications were also received from 77 individuals who were not engaged in the business of outdoor advertising, but only advertising the business which they themselves were carrying on.

The total number of applications for permits received from April 1, 1921, to Nov. 30, 1923, was 12,921. The number of applications received from Dec. 1, 1922 to Nov. 30, 1923, was 1,539, of which 1,407 were for new locations and on which 643 permits were granted for the erection of advertising signs, approximately 90 per cent of which were for signs of an area less than 60 square feet.

The total number of permits granted for the maintenance of outdoor advertising signs, from April 1, 1921 to Nov. 30, 1923 was 6,553; and from Dec. 1, 1922, to Nov. 30, 1923, was 1,811.

The total number of permits cancelled by the advertisers to Nov. 30, 1923, by reason of the permittee not being able to continue the use of certain locations, was 732.

Forty special permits, under Section 4 paragraph D of the Rules and Regulations of 1921, for the placing of banners, cards, etc., by circuses and agricultural fairs, were granted during the year.

Fourteen applications for permission to erect signs, and six applications for permission to post banners and cards, were disallowed.

The total number of applications on which no permits had been granted, and were cancelled, was 539.

Permits numbering 5,060 were renewed July 1, 1923, to expire July 1, 1924.

The total number of permits in force Nov. 30, 1923, was 5,821.

*Billboards, Advertising Signs.* — A number of billboards and signs have been relocated and reduced in size by the advertisers, for various reasons, on request of the Division.

A large number of signs erected within State Highway layouts have been removed by the Division. Signs on other public ways are under the control of cities and towns.

*Ordinances and By-Laws.* — The following cities and towns, in addition to the 17 named in the Report of this Department for 1922, have submitted for the approval of the Division ordinances or by-laws for the further regulation and restriction of billboards or other advertising devices within their respective limits: —

Amherst, Concord, Norwood, Salem, Tyngsborough.

The only ordinance or by-law approved by the Division during the year was a by-law of the Town of Milton.

In January, February, May, June and November, 1923, hearings were held by the Division on objections registered by the officials of the following cities and towns to the proposed location of certain signs: —

Acushnet, Agawam, Amherst, Andover, Arlington, Bedford, Beverly, Braintree, Brockton, Brookfield, Canton, Carver, Clinton, Cohasset, Dalton, Dover, Dracut, Duxbury, Eastham, E. Longmeadow, Everett, Framingham, Gardner, Gloucester, Hanover, Haverhill, Hingham, Holliston, Holyoke, Kingston, Lancaster, Lexington, Longmeadow, Lunenburg, Marshfield, Mattapoisett, Medford, Melrose, Merrimac, Middleborough, Millbury, Milton, Monson, Natick, Needham, Newburyport, North Adams, N. Attleborough, Norwood, Plymouth, Randolph, Reading, Salem, Saugus, Sherborn, So. Hadley, Stoneham, Swampscott, Taunton, Wakefield, Walpole, Waltham, Watertown, Wayland, Wellesley, W. Springfield, Weymouth, Wrentham.

The Division held a public hearing April 26, 1923 on a petition of 15 towns located south of the Cape Cod Canal, for the designation by the Division of approximately 140 miles of the main highways therein located, as Scenic Highways.

No highways have been designated Scenic Highways during the year.

Attention is called to the recommendations for Legislation on page 36 of this report.

The receipts for the year ending Nov. 30, 1923 were \$16,424.05, and the expenditures for the same period were \$9,249.66.

The receipts for the year ending Nov. 30, 1922, were \$13,896.93, and the expenditures for the same period were \$11,272.62.

#### SALE OF MAPS.

Under authority of section 1, chapter 81, General Laws as amended by section 1, chapter 57, Acts of 1923, 282 copies of the road map of Massachusetts, 1922, have been sold during the year ending Nov. 30, 1923, for which \$141 was received and paid into the treasury of the commonwealth.



## RECOMMENDATIONS FOR LEGISLATION.

## DIVISION OF HIGHWAYS.

*To further regulate the Granting of Licenses for the Sale of Crude Petroleum on Land adjoining State Highways.*

In the interests of public safety, especially for minimizing the danger resulting from the erection of buildings in certain localities on land adjoining State highways, and to prevent unnecessary interference with public travel on such highways which, in some cases, is caused by motor vehicles stopping opposite to and near buildings which have been erected under permits or licenses for the keeping, storage or sale of crude petroleum or any of its products, the Division recommends legislation which is embodied in the accompanying draft of a bill.

*Advertising Signs.*

It is recommended that sections thirty and thirty-three of chapter ninety-three of the General Laws, relative to advertising signs and devices within public view, be amended, as set forth in the accompanying draft of a bill. It is believed the amendment of section thirty-three will make more certain the detection and punishment of violations of this law.

## REGISTRY OF MOTOR VEHICLES.

*The Determination by the Division of the Horse Power or Carrying Capacity of Motor Vehicles or Trailers.*

It is recommended that section two of chapter ninety of the General Laws as amended, and which now provides that the Registrar of Motor Vehicles shall determine the horse power or carrying capacity of motor vehicles and trailers, be further amended so that the duty of the Registrar in this respect shall be performed by the Division. The accompanying draft of a bill embodies this recommendation.





APPENDIX.

CONTRACT PRICES DEC. 1, 1922 TO NOV. 30, 1923.

TOWN OR CITY.	CONTRACTOR.	EXCAVATION.			Mas. Plain Conc. (Cu. Yd.).	BIT. SUR- FACING.		Conc. Surf. (Cu. Yd.).
		Earth (Cu. Yd.).	Borrow (Cu. Yd.).	Ledge (Cu. Yd.).		Asphalt (Gals.).	Tar (Gals.).	
Adams . . . . .	Carl B. Lindholm . . . . .	\$1 60	-	\$6 00	\$20 00	-	-	\$13 40
Amesbury . . . . .	J. E. Watkins . . . . .	1 85	\$1 85	4 00	25 00	\$0 17	-	-
Ayer . . . . .	P. J. Keating . . . . .	1 85	1 80	2 50	20 00	17	-	-
Bernardston . . . . .	C. I. Hosmer . . . . .	1 30	1 40	5 00	25 00	-	-	-
Bourne . . . . .	Wm. A. Jones . . . . .	1 50	1 60	5 00	20 00	25	-	-
Bourne . . . . .	Canedy Const. Co. . . . .	1 00	1 10	4 00	20 00	18	-	-
Braintree . . . . .	E. C. Sargent . . . . .	1 50	-	5 00	-	15	-	-
Braintree . . . . .	F. F. McCarthy . . . . .	1 50	-	3 00	25 00	18	-	-
Brimfield . . . . .	D'Onfro Bros. . . . .	1 30	1 40	3 00	35 00	16	-	-
Burlington . . . . .	Sweeney Motor Truck & Contr. Co. . . . .	1 25	1 45	4 50	22 00	-	-	-
Burlington . . . . .	L. C. Carchia Co. . . . .	1 72	-	1 72	20 00	14	-	-
Concord . . . . .	P. J. Keating . . . . .	3 25	1 85	1 85	20 00	16	-	-
Dalton . . . . .	Hoyt Constr. Co. . . . .	2 00	1 25	9 00	26 00	23	-	-
Dalton . . . . .	D. W. Dwyer . . . . .	1 75	1 60	-	22 00	20	-	-
Dracut . . . . .	Antonio Pallatto . . . . .	1 60	1 70	4 75	25 00	16	-	-
Dudley . . . . .	C. Bianchi & Co., Inc. . . . .	1 50	-	5 00	25 00	-	-	12 75
Eastham . . . . .	W. A. Norton Co. . . . .	-	2 50	-	-	-	-	-
Easthampton . . . . .	W. C. Tannatt, Jr. . . . .	94	1 20	3 20	25 00	18	-	-
Easton . . . . .	Powers Bros. . . . .	1 40	-	5 00	28 00	-	-	14 00
Edgartown-W. Tisbury	M. F. Roach . . . . .	1 00	1 15	5 00	25 00	20	-	-
Essex . . . . .	Welch & Moynihan . . . . .	1 65	-	-	12 00	-	-	-
Framingham . . . . .	R. H. Newell Co. . . . .	1 75	1 45	6 00	25 00	16	-	-
Framingham . . . . .	Framingham Const. & Sup- ply Co. . . . .	1 70	2 00	3 50	-	17	-	-
Gay Head . . . . .	M. F. Roach . . . . .	1 35	1 50	5 00	25 00	22	-	-
Gill . . . . .	Chas. I. Hosmer . . . . .	1 18	1 25	4 00	25 00	-	-	-
Gloucester . . . . .	Welch & Moynihan . . . . .	1 60	1 35	5 00	25 00	17	-	-
Grafton . . . . .	Chas. A. Haggerty . . . . .	1 50	-	4 00	25 00	20	-	13 00
Grafton . . . . .	C. E. Horne . . . . .	1 75	1 60	4 00	30 00	19	-	-
Harvard . . . . .	R. E. Bull . . . . .	1 70	1 70	2 50	29 00	19	-	-
Haverhill . . . . .	L. C. Carchia . . . . .	80	-	6 00	20 00	-	-	14 00
Hingham . . . . .	Bradford Weston . . . . .	1 20	-	5 00	22 00	14	-	12 00
Holbrook . . . . .	Powers Bros. . . . .	1 50	-	5 00	-	15	-	-
Holbrook . . . . .	E. C. Sargent . . . . .	1 75	-	5 00	-	16	-	-
Ipswich . . . . .	McCabe & Giovannini . . . . .	1 70	1 70	5 00	30 00	14	-	-
Lakeville-Freetown . . . . .	T. G. Jewett, Jr. . . . .	1 40	1 30	5 00	25 00	16	-	-
Lanesborough . . . . .	Lane Constr. Corp. . . . .	1 50	1 75	4 50	30 00	-	-	13 50
Longmeadow . . . . .	Lane Const. Corp. . . . .	1 50	-	3 00	-	-	-	11 75
Lunenburg . . . . .	Ralph E. Bull . . . . .	1 45	1 45	3 00	23 00	16	-	-
Mashpee-Sandwich . . . . .	S. W. Lawrence . . . . .	1 25	1 40	-	-	18	-	-
Mendon . . . . .	L. C. Carchia Co. . . . .	2 00	2 00	2 00	20 00	16	-	-
Merrimac . . . . .	A. Marino . . . . .	1 35	-	-	-	15	-	15 00
Middleborough-Bridgewater	Eng. Serv. & Const. Co. . . . .	1 60	1 90	5 00	-	16	-	-
Middleborough . . . . .	Federal Const. Co., Inc. . . . .	1 25	-	2 00	25 00	14	-	-
Middleborough, Rochester- Waltham. . . . .	Lane Const. Corp. . . . .	1 35	-	3 00	25 00	16	-	-
Milford . . . . .	Milford Const. Co. . . . .	1 55	1 45	4 25	25 00	165	-	-
Milton . . . . .	Lane Const. Corp. . . . .	1 50	-	4 00	25 00	15	-	-
New Braintree . . . . .	John Laurenzi . . . . .	1 75	1 75	4 50	25 00	17	-	-
No. Attleborough, Attleboro	T. J. Quinn . . . . .	1 20	1 20	2 95	30 00	14	-	13 00
Northborough . . . . .	C. E. Horne . . . . .	1 45	-	3 00	30 00	16	-	-
Norwood . . . . .	Rowe Contr. Co. . . . .	1 50	-	7 00	40 00	-	-	13 50
Randolph-Stoughton . . . . .	Powers Bros. . . . .	1 35	1 20	4 00	-	14	-	-
Raynham . . . . .	Charles T. Alger . . . . .	1 50	-	5 00	-	16	-	-
Rehoboth . . . . .	Perini & Sons, Inc. . . . .	1 15	1 15	3 75	25 00	15	-	13 00
Revere . . . . .	M. McDonough Co. . . . .	1 35	1 50	6 00	25 00	13	-	-
Rockport . . . . .	Hamlin & Ballyntine . . . . .	1 65	1 90	5 00	25 00	16	-	-
Rutland . . . . .	Lane Const. Corp. . . . .	1 30	1 35	3 50	25 00	16	-	-
Saugus . . . . .	Welch & Moynihan . . . . .	2 00	1 65	5 00	25 00	16	-	-
Scituate . . . . .	Reynolds Bros. . . . .	1 25	1 25	5 00	25 00	-	-	-
Sharon . . . . .	D'Onfro Bros. . . . .	1 60	-	5 00	-	15	-	-
Sheffield . . . . .	Perini & Sons, Inc. . . . .	1 50	1 50	4 00	30 00	-	-	13 00
Southampton . . . . .	Hoyt Const. Co. . . . .	1 25	1 10	5 00	23 00	18	-	-
Stockbridge . . . . .	S. W. Menguale . . . . .	1 20	-	3 00	15 00	18	-	-
Swansea . . . . .	Joseph McCormick . . . . .	1 25	1 40	5 00	25 00	-	-	12 90
Templeton . . . . .	Bianchi & Way . . . . .	90	-	3 00	-	-	-	-
Webster . . . . .	Hassam Paving Co. . . . .	1 50	-	2 00	-	-	-	13 55
Wellfleet-Truro . . . . .	Lane Const. Corp. . . . .	1 50	1 50	3 00	35 00	-	-	-
Westborough . . . . .	J. J. Loonie . . . . .	1 75	-	2 00	25 00	15	-	-
W. Brookfield . . . . .	Beltcher Const. Co., Inc. . . . .	1 00	1 50	4 00	-	20	-	-
W. Brookfield . . . . .	Lane Const. Corp. . . . .	80	-	3 00	25 00	19	-	17 50

APPENDIX.

CONTRACT PRICES DEC. 1, 1922 TO NOV. 30, 1923.

Broken Stone (Ton).	PIPE CULVERTS (LINEAL FOOT).							Fencing (Lin. Ft.).	Stone Filling (Cu. Yd.).	Bounds (Each).	Catch Basins (Each).	Reinforced Conc. Mas. (Cu. Yd.).	Gravel Borrow (Cu. Yd.).
	CLAY.			CORR. IRON.									
	10 In.	12 In.	15 In.	12 In.	14 In.	16 In.	18 In.						
\$4 50	\$2 50	\$2 00	-	-	-	-	-	\$1 10	-	\$5 00	\$100 00	\$40 00	\$1 60
3 90	-	1 95	-	-	-	-	-	85	-	-	85 00	-	2 00
3 90	1 50	1 50	-	-	-	-	-	-	-	-	85 00	-	1 80
4 15	-	2 50	-	\$2 25	-	-	-	1 00	\$3 30	-	100 00	32 00	2 20
-	-	-	-	2 20	-	-	-	75	-	-	100 00	-	-
-	-	-	-	-	-	-	-	1 00	-	-	-	42 00	1 25
3 65	1 50	-	-	-	-	-	-	-	2 75	-	90 00	-	2 00
3 75	1 25	1 75	-	-	-	-	-	75	-	-	90 00	26 00	1 60
4 70	-	3 00	-	-	-	-	-	60	2 85	5 00	80 00	40 00	1 40
-	1 75	-	\$2 25	-	-	-	-	85	-	-	85 00	35 00	1 45
2 90	-	-	-	-	-	-	-	75	-	-	90 00	25 00	1 72
3 85	-	2 00	-	-	-	-	-	-	-	5 00	100 00	-	1 85
3 60	-	-	-	-	-	-	-	65	2 15	-	-	39 00	2 60
3 85	-	-	-	-	-	-	-	60	5 00	-	-	34 50	1 50
4 00	-	-	4 50	-	-	-	-	75	-	-	-	33 00	1 75
-	-	-	-	3 25	-	-	-	-	-	-	125 00	-	2 00
-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 25	-	-	3 00	2 14	-	\$2 70	-	75	3 25	-	-	30 00	1 20
-	2 00	2 25	3 00	-	-	-	-	1 00	-	5 00	80 00	40 00	1 80
-	-	-	-	1 90	-	-	\$2 50	-	-	3 00	-	-	1 50
-	-	-	-	-	-	-	-	1 00	-	-	-	-	2 50
4 30	1 50	1 75	-	-	-	-	-	90	-	-	100 00	-	1 45
4 00	-	-	-	-	-	-	-	85	-	-	-	28 00	2 00
-	-	-	-	2 00	\$2 50	2 50	-	1 00	-	-	100 00	35 00	-
-	-	3 00	-	2 25	-	-	3 00	65	3 00	-	90 00	30 00	2 00
4 10	-	1 80	-	-	-	-	-	1 00	-	5 00	90 00	30 00	2 50
4 50	-	-	-	-	-	-	-	-	3 50	-	85 00	-	1 75
4 00	-	-	-	2 75	-	-	-	-	3 50	-	100 00	-	1 60
4 40	-	-	-	2 80	-	-	-	-	3 20	-	-	35 00	2 30
-	-	1 50	2 00	-	-	-	-	-	-	-	80 00	30 50	1 50
2 65	-	1 60	1 80	-	-	-	-	73	-	6 00	75 00	26 00	1 20
3 90	2 00	2 25	2 75	-	-	-	-	-	2 75	-	90 00	-	2 00
3 90	-	2 25	-	-	-	-	-	-	-	-	90 00	-	1 60
4 00	-	2 00	-	-	-	-	-	1 00	-	-	100 00	40 00	2 00
4 50	-	2 50	-	3 00	-	-	-	-	-	5 00	9 000	30 00	1 30
-	-	1 75	-	-	-	-	-	85	-	5 00	100 00	-	1 75
-	-	1 50	2 00	-	-	-	-	-	-	-	75 00	-	-
4 65	-	1 90	-	-	-	-	-	60	2 70	-	95 00	29 00	1 45
3 25	-	-	-	2 00	-	-	-	-	-	-	-	-	1 40
3 55	-	-	-	-	-	-	-	-	2 00	5 00	-	-	2 00
4 50	-	2 50	-	-	-	-	-	-	-	-	125 00	-	2 50
5 75	-	-	-	-	-	-	-	95	-	-	-	36 50	2 50
4 40	-	-	-	-	-	-	-	60	-	5 00	100 00	-	1 60
4 00	-	1 75	-	-	-	-	-	75	-	5 00	100 00	40 00	1 50
4 00	-	-	-	-	-	-	-	1 00	3 00	-	-	30 00	1 75
3 15	1 50	1 75	2 50	-	-	-	-	80	-	5 00	100 00	30 00	1 50
4 75	-	-	-	2 50	-	-	3 00	-	2 75	-	-	-	2 00
3 65	2 00	2 00	2 00	-	-	-	-	70	-	-	95 00	32 50	1 40
4 10	-	-	-	-	-	-	-	-	3 50	-	-	40 00	1 60
-	1 75	-	-	-	-	-	-	1 00	-	4 00	60 00	40 00	1 75
3 30	-	1 50	1 50	-	-	-	-	75	3 00	-	80 00	-	1 60
3 75	-	-	-	3 00	-	-	-	-	-	-	-	-	1 75
4 50	-	2 00	-	-	-	-	-	60	-	5 00	85 00	32 00	1 40
2 25	-	1 50	-	-	-	-	-	1 00	1 75	3 50	75 00	30 00	1 75
4 05	-	2 25	-	-	-	-	-	-	-	-	-	-	1 90
4 20	-	-	-	-	-	-	-	85	3 00	5 00	-	35 00	1 65
3 00	-	-	-	-	-	-	-	75	-	-	80 00	-	1 65
3 65	1 40	1 50	-	-	-	-	-	60	4 00	-	75 00	32 00	1 60
4 75	1 50	2 00	-	-	-	-	-	-	-	-	75 00	-	1 65
-	-	2 50	-	2 50	-	-	-	75	-	5 00	100 00	40 00	2 00
3 10	-	1 75	-	-	-	-	-	80	3 05	4 00	110 00	27 00	2 00
4 50	-	-	-	2 50	-	-	3 00	60	2 90	-	-	25 00	2 00
-	-	-	-	2 50	-	-	-	75	-	5 00	-	35 00	1 60
-	-	-	-	-	-	-	-	80	3 00	-	-	-	2 00
4 75	-	-	-	-	-	-	-	-	3 50	-	-	-	2 00
-	-	-	-	-	-	-	-	90	-	5 00	100 00	-	-
4 00	-	-	-	-	-	-	-	-	3 25	-	100 00	30 00	1 75
4 00	-	-	-	-	-	-	-	70	-	-	-	33 00	3 00
4 15	-	-	-	-	-	-	-	85	3 25	5 00	-	35 00	2 00



CONTRACT PRICES DEC. 1, 1922 TO NOV. 30, 1923 — *Concluded.*

TOWN OR CITY.	CONTRACTOR.	EXCAVATION.			Mas. Plain Conc. (Cu. Yd.).	BIT. SUR- FACING.		Cone. Surf. (Cu. Yd.).
		Earth (Cu. Yd.).	Borrow (Cu. Yd.).	Ledge (Cu. Yd.).		Asphalt (Gals.).	Tar (Gals.).	
Westfield . . . . .	D. O'Connell's Sons . . . .	\$1 10	\$1 35	\$5 00	\$26 00	-	\$0 15	-
Westwood . . . . .	Rowe Contr. Co. . . . .	1 90	-	10 00	-	\$0 15	-	-
Whately . . . . .	Lane Const. Corp. . . . .	1 25	1 50	4 00	30 00	15	-	-
Wilmington . . . . .	Federal Const. Co. . . . .	2 25	-	5 00	-	16	-	-
Worthington . . . . .	Jos. McCormick . . . . .	1 50	1 40	3 00	25 00	-	-	-
Wrentham-Norfolk-Walpole	Alco Contr. Co., Inc. . . . .	1 50	1 50	5 00	30 00	20	-	\$13 90
Yarmouth . . . . .	Wm. A. Jones & H. L. Thomas.	1 50	1 75	1 00	20 00	18	-	-

CONTRACT PRICES DEC. 1, 1922 TO NOV. 30, 1923 — *Concluded.*

Broken Stone (Ton).	PIPE CULVERTS (LINEAL FOOT).							Fencing (Lin. Ft.).	Stone Filling (Cu. Yd.).	Bounds (Each).	Catch Basins (Each).	Reinforced Conc. Mas. (Cu. Yd.).	Gravel Borrow (Cu. Yd.).
	CLAY.			CORR. IRON.									
	10 In.	12 In.	15 In.	12 In.	14 In.	16 In.	18 In.						
\$2 75	-	-	-	-	-	-	-	\$0 70	\$3 50	-	-	\$35 00	\$1 50
3 45	\$1 75	-	\$2 25	-	-	-	-	1 00	2 25	-	\$75 00	-	2 00
3 45	-	\$2 00	-	-	-	-	-	-	3 50	\$4 00	-	35 00	1 75
3 80	2 50	-	-	-	-	-	-	-	-	5 00	100 00	-	2 50
-	-	1 85	2 50	\$2 25	-	-	\$3 00	70	2 85	-	100 00	35 00	2 06
4 00	-	3 00	-	-	-	-	-	1 00	-	10 00	100 00	40 00	1 35
4 50	-	-	-	2 25	-	-	-	75	-	-	100 00	-	2 00

REGISTRY OF MOTOR VEHICLES.

MOTOR VEHICLE DEATHS, INJURIES, COLLISIONS.

The Registry of Motor Vehicles serves the public in two ways: (1) By issuing registration plates and licenses. (2) By safeguarding the public, both motorists and pedestrians, in the use of motor vehicles on the highways. The amount of work, administrative and clerical, required to perform these two functions properly is indicated in the several statements and tabulations submitted herewith. During 1923 the Registry issued 578,000 registrations and number plates, about 2,000 dealers' registrations, over 536,000 licenses to operators and chauffeurs besides conducting approximately 159,000 examinations of applicants for licenses, and handling nearly \$7,000,000 in cash receipts.

The duties of the Registrar consist for the most part in enforcing the provisions of the Motor Vehicle Law, so far as it relates to the holding of licenses and registrations.

Investigations and examinations are under the direction of the Chief Inspector with the assistance of seventy-seven inspectors. During the year they have submitted 5,827 reports relating to fatal and non-fatal accidents, cases of intoxication, headlight violations, etc., besides prosecuting 495 motorists in Court. They have also inspected over 1,000 garages, and filed over 40,000 "blue card" complaints, many of which have led to the suspension of licenses.

During the past year the Registrar has revoked and suspended no less than 7,628 licenses and 3,985 registrations. He has also presided at 3,612 hearings given to motorist offenders who desired the reinstatement of their licenses.

Notwithstanding all warnings and preventative measures, the number of deaths by motor vehicles in 1923 rose to 578 as against 522 last year, an increase of 10.7%. But when compared with former years, this increase is below the average, which has been 16.3% during the past decade. Moreover, the number killed, when compared with the increase in registrations, is much less than might reasonably be expected,—the registration increase being 25.2% while the percentage of increase in deaths due to motor vehicles was only 10.7%. Again, the ratio of deaths to registrations was this year still further reduced to the decimal .00100. In other words, while last year there were 884 motor vehicles in the State for each person killed, this year there were but one short of 1,000 cars for each person killed.

During the past year more requests than ever have been received for information concerning the organization and work of the Registry. These requests come from other States and even from Europe. Special interest is shown in the measures adopted in Massachusetts to prevent automobile accidents which may be briefly summarized as follows:— (1) The strict examination of all applicants for licenses to drive. (2) The summary taking off the road of all speedsters and other offenders against the Motor Vehicle Law by the revocation or suspension of their licenses and registrations. (3) By seeking the co-operation of the Courts and the Police throughout the State to aid in enforcing the Law. (4) By untiring vigilance in recording and analyzing accidents in order to determine their causes. (5) By using the press to warn the public against the hazards of the road. (6) By assisting in safety campaigns during the special "danger months" in which, with baffling regularity every year, the highest numbers of fatal accidents occur.

Persons killed and injured:	KILLED.		INJURED.	
	1922.	1923.	1922.	1923.
Pedestrians, by autos . . . . .	302	334	8,986	9,601
Pedestrians, by motor cycles . . . . .	1	1	28	31
Pedestrians near street cars . . . . .	8	10	11	25
Occupants of autos . . . . .	157	165	5,202	5,772
Occupants of motor cycles . . . . .	22	38	304	262
Bicycle riders . . . . .	19	20	425	305
Occupants of teams, carriages, etc. . . . .	2	2	183	124
Coasters . . . . .	11	8	138	97
Totals . . . . .	522	578	15,277	16,217



	KILLED.		INJURED.	
	1922.	1923.	1922.	1923.
Children killed and injured:				
Boys . . . . .	149	164	3,451	3,500
Girls . . . . .	60	59	1,163	1,437
Totals . . . . .	209	223	4,614	4,937

## NUMBER OF COLLISIONS.

	1922.	1923.
Autos v. pedestrians . . . . .	8,547	9,754
Autos v. autos . . . . .	12,630	11,844
Autos v. teams, carriages, etc. . . . .	463	316
Autos v. bicycles . . . . .	491	367
Autos v. trolley cars . . . . .	466	490
Autos v. poles, trees, etc. . . . .	1,356	1,253
Autos v. trains . . . . .	56	57
Autos v. motor cycles . . . . .	404	358
Autos v. sled . . . . .	115	30
Motor cycles v. pedestrians . . . . .	30	76
Totals . . . . .	24,558	24,545
In the daytime . . . . .	18,778	18,075
After dark . . . . .	5,780	6,470
Totals . . . . .	24,558	24,545

## REVOCATIONS AND SUSPENSIONS FOR 1922 AND 1923.

	1922.	1923.
Licenses suspended . . . . .	3,184	4,592
Licenses revoked . . . . .	1,385	1,526
Rights suspended . . . . .	1,048	1,510
Registration certificates suspended . . . . .	23	59
Registration certificates revoked . . . . .	1,661	2,251
Registration certs. and licenses suspended . . . . .	40	68
Registration certs. and licenses revoked . . . . .	916	1,450
Registration certs. revoked and rights suspended . . . . .	96	133
Rights to have cars operated in Mass. suspended . . . . .	16	24
Totals . . . . .	8,369	11,613
Resulting from investigations . . . . .	4,555	6,441
Resulting from court convictions . . . . .	3,482	4,498
Resulting from police complaints . . . . .	262	363
Resulting from judge's complaints . . . . .	39	58
Resulting from constabulary complaints . . . . .	31	253
Totals . . . . .	8,369	11,613
Reckless and endangering . . . . .	512	772
Liquor . . . . .	2,108	2,703
Going away . . . . .	207	210
Without authority . . . . .	307	365
Improper person . . . . .	822	1,547
Improper person, liquor . . . . .	352	630
Improper operation . . . . .	1,615	2,606
Two speeds . . . . .	304	308
Three speeds . . . . .	20	19
Improper equipment, miscellaneous . . . . .	703	207
Improper equipment, lights . . . . .	320	912
Improper equipment, brakes . . . . .	305	523
Deaths . . . . .	515	532
Other offences . . . . .	279	279
Totals . . . . .	8,369	11,613

	1922.	1923.
Hearings . . . . .	1,840	3,612
Court recommendations adopted: —		
Liquor . . . . .	304	195
Reckless and endangering . . . . .	65	33
Going away . . . . .	24	18
Without authority . . . . .	4	3
Racing . . . . .	1	—
Totals . . . . .	398	249
Persons whose licenses were suspended or revoked and who had to pass an examination in order to have them returned . . . .	706	760

ACCIDENT REPORT LETTERS.

Under Section 26, Chapter 90, of the General Laws, every operator of a motor vehicle involved in an accident in which any person is killed or injured is required to report in writing to the Registrar. The number of these accident reports grows from year to year (18,689 were received in 1923), and requires constantly increasing clerical work.

COMPARATIVE STATEMENT SHOWING RATIO OF ACCIDENTS TO YEARLY REGISTRATIONS, SUSPENSIONS, ETC.

YEAR.	Auto- mobiles regis- tered.	Motor Cycles regis- tered.	Total Regis- trations.	Number of Persons killed.	Ratio of Deaths to Regis- trations.	Number of Persons injured.	Ratio of Injuries to Regis- trations.	Licenses sus- pended.	Licenses re- voked.	Rights sus- pended.
1908	18,066	1,922	19,988	13	.00065	486	.02431	51	44	-
1909	23,971	2,394	26,365	54	.00205	989	.03751	132	68	-
1910	31,360	3,358	34,718	77	.00222	963	.02774	198	90	-
1911	38,907	3,658	42,565	110	.00258	1,248	.02932	254	95	-
1912	50,132	5,034	55,166	142	.00257	1,962	.03557	325	190	-
1913	62,660	7,127	69,787	188	.00269	2,923	.04188	365	198	-
1914	77,246	8,161	85,407	229	.00268	4,010	.04695	521	231	34
1915	102,633	9,520	112,153	294	.00262	6,197	.05525	615	303	181
1916	136,809	10,713	147,522	315	.00214	9,131	.06190	641	514	232
1917	174,274	11,065	185,339	438	.00236	7,282	.03929	794	717	300
1918	193,497	12,862	206,359	499	.00242	8,598	.04166	957	811	398
1919	247,183	13,698	260,881	582	.00223	16,287	.06243	1,013	856	264
1920	304,631	15,143	319,774	481	.00150	21,182	.06624	1,270	1,172	346
1921	360,731	12,058	372,790	544	.00145	11,487	.03081	1,940	1,119	629
1922	449,838	11,675	461,513	522	.00113	15,277	.03310	3,184	1,385	1,048
1923	566,150	11,733	577,883	578	.00100	16,217	.02804	4,592	1,526	1,510



EASTERN CONFERENCE OF MOTOR VEHICLE ADMINISTRATORS.

During the year 1923 four meetings of the Conference of Motor Vehicle Administrators were held. The first meeting in Newark, New Jersey, on January 27, the second in Connecticut on April 27, the third in Vermont on July 27, and the fourth in New Hampshire on September 28. Either the Registrar or someone from the Department representing him attended each of these meetings.

This Conference includes the head of the Motor Vehicle Department in each of the following States:— Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania and Maryland.

The object of the Conference is to promote uniformity, co-operation and reciprocity among the member States in respect to the regulation and operation of motor vehicles. Many resolutions were adopted for the guidance of Motor Vehicle Administrators in their respective States, and there was informal discussion on other subjects of common interest.

Some of the most important results of the Conference are as follows:— The individual list of approved headlighting devices issued by the member States have been made uniform so far as this is possible. The Conference now approves or disapproves of all headlighting devices which are submitted to any member State, and Conference action in this respect guides the Motor Vehicle Administrator. Some of the member States have rejected all devices not approved by the Conference, and other States as in our own case have split the list of approved devices into two parts, — A — Those approved by the Conference, and B — Those which have not been approved by the Conference, but are still legal in this State. Conference approvals are given upon recommendation of an active headlight testing committee which consists of one member from each State. This committee during the year has tested and reported on over 200 headlighting devices.

Considerable discussion has been raised in regard to the examination of applicants for licenses. The experience of the Registry of Motor Vehicles in this State has been very helpful to the other Conference members. Those States which have not heretofore examined all applicants for licenses are now favorably considering the matter. In Pennsylvania a plan for the examination of all applicants based on the Massachusetts method is already going into effect.

There is a Conference Committee considering the important matter of uniformity in traffic laws. Hand signals, colors for traffic signals, and limitations of over-all length, height, width and gross weight of trucks, are other matters which were given special consideration.

INVESTIGATIONS AND PROSECUTIONS BY INSPECTORS.

The following table presents a classification and summary of the work of the inspectors other than examination work, together with comparative figures for the preceding year: —

	1922.	1923.
Total reports received from inspectors . . . . .	5,091	5,827
Itemized as follows:		
Accidents, fatal . . . . .	510	508
Accidents, non-fatal . . . . .	701	750
Accidents, brief reports . . . . .	498	392
General reputation . . . . .	870	947
Miscellaneous . . . . .	2,512	3,230
Totals . . . . .	5,091	5,827
Complaints filed . . . . .	13,281	11,650
Garages inspected . . . . .	1,339	1,028
Headlight violations reported . . . . .	12,096	30,731
Prosecutions conducted . . . . .	405	495
Fines imposed . . . . .	\$9,462	\$15,233

## ANALYSIS OF COURT ABSTRACTS RECEIVED.

	1922.	1923.
Number of courts forwarding abstracts . . . . .	95	95
Number of abstracts received (approximate) . . . . .	36,000	40,000

*Offences.*

(Analysis of guilty cases not including appeals.)

Overspeeding . . . . .	7,945	8,123
Reckless . . . . .	190	235
Intoxicated . . . . .	1,923	2,608
Using auto without authority . . . . .	270	399
Endangering lives . . . . .	414	628
Not stopping after causing injury . . . . .	236	279
Without license . . . . .	3,221	3,836
Without registration certificate . . . . .	1,640	1,556
Unregistered vehicle . . . . .	340	485
Improper display or no register no. . . . .	415	629
Refusing to stop on signal . . . . .	404	501
Unlighted lamps . . . . .	1,372	1,388
No signal . . . . .	3,504	2,409
Dazzling lights (or improper) . . . . .	264	217
Operating within 8 feet of street car . . . . .	403	377
Violation of metropolitan park rules . . . . .	349	675
Operating, license suspended or revoked . . . . .	100	159
Larceny . . . . .	91	88
Manslaughter . . . . .	4	4
Miscellaneous . . . . .	2,406	2,282

## EXAMINATIONS FOR LICENSES.

Examinations of applicants for licenses to operate motor vehicles were held at fifty-seven examining points in the Commonwealth during the summer months. At some of these points examinations were conducted daily and at other places weekly or fortnightly, depending on the season of the year. During the fiscal year 1923, inspectors conducted 158,373 examinations of private operators and chauffeurs. The table below gives the several classes of persons examined and shows the number of those who were found unfit.

	1920.	1921.	1922.	1923.
Total examinations . . . . .	39,845	94,023	122,220	158,373 <sup>1</sup>
Chauffeurs examined . . . . .	37,444	46,506	54,541	55,427
Chauffeurs unfit . . . . .	4,510	5,485	7,575	12,915
Operators examined . . . . .	2,401	46,136	64,447	64,622
Operators unfit . . . . .	403	9,716	12,968	19,508
Removal of restriction, examined . . . . .	—	—	3,130	5,261
Removal of restriction, unfit . . . . .	—	—	255	530
"Competency", passed . . . . .	83	137	102	93
"Competency", unfit . . . . .	45	23	17	17

## HEADLIGHTING.

Five headlighting devices were submitted and approved by the Registrar under the provisions of Section 7, Chapter 90, General Laws. None were refused approval directly on account of procedure which is followed by the Motor Vehicle Administrators making up the Eastern Conference of Motor Vehicle Administrators. Under this procedure devices which are submitted to Conference states for approval are referred to the Conference at one of its quarterly meetings, and formal application for approval of the individual states is not

<sup>1</sup> This figure is in variance with the number of examinations listed in the cash report by reason of the fact that a small number of applications covering examinations held in November were included in the December cash figures.



made by the manufacturer until and unless the Conference approves of the devices in question. This method of approving headlight devices has resulted in a uniform list for all states which are members of the Conference. It makes it possible for an operator in any of these Conference states to operate his car in practically any state in the country without fear of violating the headlight laws, providing, of course, that the lamps are in proper adjustment. Some of the devices which had been approved in this State prior to the inception of Conference action on headlighting devices were not approved by the Conference. These devices were tested originally under earlier and less stringent laboratory specifications, and although their use is still legal in this State, it was necessary to separate them on the printed list issued by the Department from the names of devices approved by the Conference. This was done by dividing the list into two parts: A. Devices approved by the Conference. B. Other devices not approved by the Conference but still legal in Massachusetts.

During the year inspectors attached to the Department reported 30,731 violations of the headlight law which compares with 12,096 for the preceding year. The principal violation was improper adjustment. The material improvement in headlighting conditions which had been made in the year 1922 had fallen off considerably during the first half of 1923. This was due to the fact that the Department inspectors had been unable to give any of their time to the rectification of headlighting conditions on account of the growth of automobile traffic and the very large increase in the number of persons examined for licenses, without a corresponding increase in the number of inspectors. Thus we find in July, 1923, the number of fatal accidents at night had increased 78% over the preceding year, and in August had increased 100%. On September 1, an intensive campaign was started against infractions of the motor vehicle law, and approximately twenty-five thousand violations of the headlight law were reported by inspectors during the months of September and October. An improvement in conditions was immediately noticed. In September there were but 4% more fatal accidents at night than in the previous year, and in October there were 5% less than in the previous year. Tables given in other parts of this report show the number of accidents.

The improper headlighting conditions may be traced to two causes: defective equipment and improper adjustment. There is considerable opportunity for the improvement in headlighting conditions by an improvement in the equipment which the motor car manufacturer furnishes. Our law does not apply to the manufacturer, and there is no law to prevent him from furnishing any headlight equipment with which he may see fit to equip his cars. The approved headlight device is generally the most accurate part of the equipment, but price cutting competition generally leads to the initial installation of inferior or defective bulbs, reflectors, etc., on new cars. It is quite possible, however, to secure reasonably good results with the equipment which is furnished by properly adjusting it, and every effort is being made to educate the motorist to give his headlighting equipment the attention it deserves, and keep it in proper adjustment.

#### REAR LAMPS.

There were many rear lamps submitted and approved by the Registrar during the year. The total number now approved is 93.

#### AIRCRAFT REGISTRATIONS.

(Chapter 90, General Laws, as amended by chapter 534 of the Acts of 1922, regulating the operation of aircraft.

In the year 1923 there were 17 pilots' licenses issued. The fees received with these applications amounted to \$160, or \$10 each for 15 original licenses, and \$5 each for 2 renewal licenses.

There were 17 airplanes registered. The fees received with these applications amounted to \$255, or \$15 for each certificate of registration.



During the year the certificates of registration of 3 airplanes were suspended. The rights of 3 persons to register aircraft were suspended; one of these rights to register was later reinstated.

During the year 1 pilot's license was suspended. The rights of 4 persons to fly were suspended; two of these rights to fly were later reinstated.

One application for the registration of an airplane was disapproved.

Two applications for pilots' licenses were disapproved.

During the year there were two convictions in court for flying without pilots' licenses.

#### USED CAR SECTION.

##### (Motor Vehicle Identification.)

This section indexes the cars reported stolen and also lists the sale of used cars. In 1923, there were 8,535 cars reported stolen to this office. This total represents cars stolen from different parts of the country.

The following cars stolen outside of Mass. have been recovered here through information furnished by this office: 1 in Bangor, Me., 1 in Augusta, Me., 2 in New York City, 1 in Cooperstown, N. Y., 1 in Little Falls, N. Y., 1 in Burlington, Vt., 1 in Englewood, N. J., 1 in Newark, N. J., 1 in Philadelphia, Pa., 1 in Washington, D. C., and 1 in Brookline, N. H.

The following cars stolen in Mass., have been recovered outside of the State through information furnished by this office: 1 in Manchester, N. H., 1 in Waterville, Me., 1 in Concord, N. H., 1 in Providence, R. I., 1 in Hackettstown, N. J., 1 in Muscatine, Iowa, 1 in Lyme, N. H., 1 in Winthrop, Conn., 1 in Wells River, Vt., 1 in Brooklyn, N. Y., 1 in New York City, 1 in Rochester, N. Y., 1 in Schenectady, N. Y., 1 in Seneca Falls, N. Y., 1 in Troy, N. Y., 1 in Greensboro, Ga., 1 in South Bend, Ind., 1 in Pittsburgh, Pa., 1 in Montreal and 1 in Quebec, Can.

The following cars stolen outside of Mass., were recovered outside of the State, through information furnished by this office: a Lincoln touring car stolen from New York City was recovered in Hillsborough, N. H. A Grant touring car stolen in Providence, R. I., was recovered in Manchester, N. H. A Studebaker touring car, stolen in Charleston, S. C., was recovered in Fredericksburg, Va. A Nash touring car stolen in New York City was recovered in Montreal, Can. An Overland sedan, registered by a party in Whitinsville, Mass., was stolen from the owner while he was visiting in Virginia. The car was found, abandoned, by the police of Warfield, Va. Through information furnished by this office, the car was returned to the owner.

The following figures show the work of the Used Car Section for the fiscal year 1923:—

	1922.	1923.
Dealers:		
Total number making reports to this office . . . . .	1,484	1,740
Total number of first-class dealers reporting . . . . .	1,112	1,214
Total number of second and third class dealers reporting . . . . .	595	526
Reports:		
Approximate number of individual reports received daily . . . . .	275	300
Approximate number of dealers' reports received daily . . . . .	325	600
Motor vehicles stolen:		
Number of stolen motor vehicles reported to this office . . . . .	8,101	8,535
Number of cars stolen in Boston . . . . .	379	516
Number of cars stolen in Massachusetts . . . . .	—	2,535
Number of cars recovered through this office . . . . .	280	371
Engine numbers assigned:		
Engine numbers assigned to cars . . . . .	459	250
Letters authorizing replacing of engine numbers . . . . .	81	85

STOLEN CARS IN BOSTON.

*Six Year Record.*

	1918.	1919.	1920.	1921.	1922.	1923.
Cars stolen . . . . .	866	1,063	480	490	379	516
Cars recovered . . . . .	607	609	297	329	159	202
Cars not recovered . . . . .	259	454	183	161	220	314

ESTABLISHMENT OF BRANCH OFFICES.

The Legislature of 1923 reported no legislation necessary on the several bills before it calling for the establishment of branch offices of the Registry of Motor Vehicles, where it would be possible to obtain registrations and licenses without sending to the Boston office.

In view of the successful experience of the Registry with its Springfield branch, particularly as to service to the public, and because it was realized that it would be a physical impossibility for the Boston office alone to handle the annual rush in December for 1924 registrations, it was decided to open eight new branch offices.

Careful consideration was given to the locations as they are also to be used as centers of control of inspectors and examiners, but, of course, it was impossible to open offices in every city and town, which necessarily meant disappointment to some of the localities which, from their viewpoint, felt that a branch should be in their city. Offices were located as follows: Pittsfield, Worcester, Lawrence, Lowell, Fall River, New Bedford, Lynn, Quincy.

The total cost for equipment, including counters, grills, lettering, shades and office furniture for all the branches did not exceed \$12,000. Wherever desirable and possible, leases were secured on a one-year basis, with the privilege of a two-year renewal, this arrangement being made so that the Commonwealth would not be bound if it was found that any error in selection of a location had been made. The selection of sites, arrangement for rental, construction of counters, etc., were completed and all the branches opened by the middle of December which was in ample time for the annual registration rush.

The estimated maintenance of the branches is \$10,000 a year for rental, and an additional \$10,000 for supplies, cleaning, telephones, lighting, etc.

The personnel of the branches was made up of nine transfers from the Boston office, and fourteen new appointments from the Civil Service list.

REGISTRATIONS, LICENSES, FEES.

The point of saturation in motor vehicle registration often discussed by motor vehicle officials seems just as distant as ever, as the figures for 1923 not only show a normal increase over 1922 of 20 per cent in every item with the exception of the motor cycles, but in the passenger car classification the increase jumped to 27 per cent and the volume of applications handled jumped from 965,915 to 1,206,803, or an increase of 25 per cent. The following statement graphically shows increased registrations:—

AUTOMOBILES, COMMERCIAL VEHICLES AND MOTOR CYCLES.

	1905.	1910.	1915.	1920.	1922.	1923.
Automobiles . . . . .	4,889	31,360	90,580	251,570	378,839	482,645
Commercial vehicles . . . . .	—	—	12,053	52,968	70,999	83,505
Motor Cycles . . . . .	553	3,358	9,520	15,142	11,675	11,733
Totals . . . . .	5,442	34,718	112,153	319,680	461,513	577,883

The fees received for the year 1923, together with the number of vehicles registered in each classification and the number of licenses granted, etc., are shown in the following table:—



## ANALYSIS OF RECEIPTS.

## Certificates of registration:

Passenger cars . . . . .	482,645	\$4,314,529	50
Commercial cars . . . . .	83,505	1,117,834	00
Trailers . . . . .	628	11,095	00
Motor cycles . . . . .	11,733	53,940	00
Motor cycle dealers . . . . .	52	520	00
Manufacturers or dealers . . . . .	1,820	45,025	00
Repairers' fees . . . . .	136	1,355	00
Additional cars . . . . .	3,626	23,506	50

## Licenses to operate:

Operators . . . . .	64,474	at \$2	00	128,948	00
Operator renewals . . . . .	249,078	" 2	00	498,156	00
Chauffeurs . . . . .	55,780	" 2	00	111,560	00
Chauffeur renewals . . . . .	167,487	" 2	00	334,974	00
Examinations . . . . .	159,121	" 2	00	318,242	00
Copies of certificates and licenses furnished . . . . .	31,897	" 50		15,948	50
Duplicate automobile number plates . . . . .	14,683	" 75		11,012	25
Duplicate motor cycle number plates . . . . .	260	" 50		130	00
State plates . . . . .	75	" 10		7	50
Rear lamp approval applications . . . . .	57	" 50	00	2,850	00

Total . . . . .				\$6,989,633	25
Motor vehicle fees rebated (deducted) . . . . .				74,275	01

Net fees . . . . .				\$6,915,358	24
Court fines received by the Treasurer and Receiver General . . . . .				356,766	54

Total receipts credited motor vehicle fees account, 1923 . . . \$7,272,124 78

The cost of running the Registry of Motor Vehicles for the year 1923 was \$707,244.37, which was 10.23 per cent of the net fees collected, as compared with 11.54 per cent for the year 1922 and 11.67 per cent for the year 1921. This cost, deducted from the receipts of the year, left the sum of \$6,564,880.41 available for legislative appropriation for highway work in 1924.

The following statement gives an analysis of expenditures for the year by the Registry:—

## EXPENDITURES FOR THE FISCAL YEAR 1923.

## Personal Services:

Regular Payroll . . . . .	\$361,780	43
Overtime . . . . .	20,234	64
		<hr/>
		\$382,015 07

## Supplies:

Books, maps, etc. . . . .	\$529	41
Typewriter supplies . . . . .	1,127	94
Adding machine supplies . . . . .	27	71
Other supplies . . . . .	530	36
Stationery . . . . .	10,308	99
Typewriter repairs . . . . .	1,279	55
Other repairs . . . . .	472	66
		<hr/>
		14,276 62

## Equipment:

Typewriter machines . . . . .	\$3,714	27
Adding machines . . . . .	315	00
Other machines . . . . .	1,231	83
		<hr/>
		5,261 10

## Furniture:

Desks . . . . .	\$3,396	60
Filing cabinets . . . . .	7,564	98
Chairs . . . . .	640	15



Furniture — *Concluded.*

Other articles as listed below:

Tables . . . . .	\$224 25
Miscellaneous . . . . .	848 02
Electric fans . . . . .	133 34

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\$12,807 34

## Travel:

Employees . . . . .	\$26,151 20
Automobiles (owned by employees) . . . . .	52,025 05
Automobiles (hired) . . . . .	1,699 50
Other travelling expenses . . . . .	3,177 87
Auto top . . . . .	275 00

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83,328 62

## Other services and expenses:

Expressage . . . . .	\$158 54
Postage . . . . .	37,734 47
Printing . . . . .	15,073 67
Other reports . . . . .	1,620 11
Lithographing . . . . .	2,318 79
Telephone . . . . .	3,468 90
Premium on bonds of employees . . . . .	135 00
Rent . . . . .	24,435 00
Water and ice . . . . .	1,120 07
Cleaning . . . . .	323 50
Towels . . . . .	568 13
Soap . . . . .	146 93

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87,103 11

Special services (labor and police) . . . . . \$1,599 03

## Other services as listed below:

Badges for inspectors . . . . .	60 00
Clocks and regulating . . . . .	168 00
Commissions as justices of the peace . . . . .	150 00
Headlight . . . . .	413 75
Number plates . . . . .	113,409 00
Sundries . . . . .	40 94

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115,840 72

## Expenses in connection with opening of branches:

Erection of counters . . . . .	\$5,049 00
Labor . . . . .	166 21
Lettering on windows and doors . . . . .	259 03
Miscellaneous . . . . .	47 99
Office Equipment . . . . .	422 00
Rent . . . . .	380 00
Tel. & Tel. . . . .	31 72
Travelling expenses . . . . .	255 84

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6,611 79

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\$707,244 37

The total amount available for 1923 was \$717,016.35.

The following comparative statement for the years 1922 and 1923 shows very plainly the increase of work as occasioned by additional registrants and licenses, etc.: —

	1922.	1923.
Automobile registrations . . . . .	378,839	482,645
Highest number plate assigned . . . . .	321,573	404,281
Commercial registrations . . . . .	70,999	83,505
Highest number plate assigned . . . . .	B65,598	B76,112
Motor cycle registrations . . . . .	11,675	11,733
Highest number plate assigned . . . . .	10,731	10,693

	1922.	1923.
Trailer registrations . . . . .	519	628
Motor cycle dealers' registrations . . . . .	39	52
Manufacturers' or dealers' registrations . . . . .	1,742	1,820
Additional cars (dealers) . . . . .	2,995	3,626
Repairers . . . . .	366	136
Licenses to operate:		
Operator . . . . .	51,208	64,474
Chauffeur . . . . .	46,818	55,780
Operator renewal . . . . .	222,482	249,078
Chauffeur renewal . . . . .	123,665	167,487
Total licenses . . . . .	444,173	536,819
Examinations . . . . .	121,245	159,121
Copies of certificates and licenses issued . . . . .	22,486	31,897
Duplicate automobile number plates . . . . .	8,549	14,683
Duplicate motor cycle number plates . . . . .	116	260
Miscellaneous applications . . . . .	198	132
Total number of applications handled . . . . .	965,915	1,206,803
Fees received . . . . .	\$5,685,527 05	\$6,989,633 25
Miscellaneous receipts . . . . .	415 19	—
Total fees . . . . .	\$5,685,942 24	\$6,989,633 25
Motor vehicle fees rebated (deducted) . . . . .	65,025 61	74,275 01
Net fees . . . . .	\$5,620,916 63	\$6,915,358 24
Court fines received by the Treasurer and Receiver-General . . . . .	264,551 53	356,766 54
Total receipts credited motor vehicle fees account . . . . .	\$5,885,468 16	\$7,272,124 78
Personal Services . . . . .	\$337,737 02	\$382,015 07
Expenses . . . . .	310,988 88	325,229 30
Total expenses . . . . .	\$648,725 90	\$707,244 37

# RECOMMENDATIONS OF THE DEPARTMENT FOR LEGISLATION RELATING TO THE REGISTRY OF MOTOR VEHICLES.

See page 36.

## DIVISION OF WATERWAYS AND PUBLIC LANDS.

### BOSTON HARBOR.

#### THE COMMONWEALTH FLATS AT SOUTH BOSTON.

##### *Commonwealth Pier No. 5.*

During the year various repairs and improvements became necessary at the pier. The fender logs were refitted and a few replaced under an agreement with W. S. Rendle at a cost of \$2,217. Repairs to the heating plant were made by the operating force and additional equipment at a cost of \$369.88 has been installed at the recommendation of the Commission on Administration and Finance. The pier has also been equipped this year with a motor street sweeper at a cost of \$4,753.

The elevators at the pier have been fitted with guard gates of the automatic type of especially heavy construction designed and installed by the George T. McLauthlin Company. The cost of this work was \$5,650.61.

For the offices of the Registry of Motor Vehicles, about 1,200 square feet of additional radiation is being provided under an agreement with the T. A.



Ridder Company. These rooms have also been repainted under an agreement with T. F. McGrath Company at a cost of \$4,428.21.

On Sept. 13, 1923, a contract was made with the Steves Lacios Company for cleaning and painting a portion of the structural steel and other metal work at the pier. This work is now in progress.

*Development of Land South of Summer Street.*

During 1922 the Federal government released to the Commonwealth the No. 2 Storehouse of the Army Stores, certain sections of the No. 1 Storehouse on E Street, and the heating plant at the southerly end of Storehouse No. 1.

Storehouse No. 2 has since its release been fully occupied. The southerly portion is used by the Highway Division, the northerly portion by the Post Office Department as a garage and repair shop for automobile trucks. The southwesterly corner of this building became the property of George C. Corcoran in accordance with the terms of agreements of April 8, 1921 and March 31, 1923, for the exchange of property to enable the Commonwealth to develop this territory. This exchange was confirmed by deeds of May 1, 1923, from the Commonwealth to George C. Corcoran and by deed of May 2, 1923, to the Commonwealth from Mr. Corcoran.

In Feb. 1923, proposals were received for the rental of the space available in Storehouse No. 1. A lease to the Terminal Wharf and Railroad Warehouse Company of sections D, E and F was executed under date of March 1, 1923. This lease is for a term of 5 years at a rental of \$5,607 per section yearly, and provides that the lessee shall rent at the same rate any other sections in this storehouse becoming available before March 1, 1926.

In May and June sections B and C were released by the Federal government and taken over by the Terminal Wharf and Railroad Warehouse Company in accordance with the terms of the lease. Sections A and G of this storehouse are still occupied by the War Department. During the year repairs have been made to the roof at a cost, including supervision, of \$1,560, and repairs and additions to the heating plant at a cost of \$768.71.

The exchange of areas pending during 1922 between the Commonwealth and the Standard Sanitary Manufacturing Company has been completed. The Commonwealth has executed a deed to the company of a parcel of land containing 14,410 square feet on C Street, and has received from the Company a deed for a piece of land at the corner of B Street and Cypher Street.

Under date of May 2, 1923, an agreement was made for the sale to the U. T. Hungerford Brass and Copper Company of 20,000 square feet of land on D Street adjacent to property of the Joseph Burnett Company. In order to provide the track service connection specified in this agreement about 500 feet of track were relocated and graded and about 1,100 feet of new track laid.

To serve property on the easterly side of C Street northerly of Cypher Street the installation of a track parallel to the one now existing has been begun.

During the year the crossing of the South Boston industrial track with the Commonwealth railroad in C Street, just northerly of Cypher Street, was regraded and repaired.

*South Bay.*

Under date of May 15, 1923, a lease was given to the Downes Lumber Company of a parcel of land on South Bay with pier and docks. This lease is for a term of ten years with a provision for renewal for a further period of ten years.

**DRY DOCK AT SOUTH BOSTON.**

*Claim of Holbrook, Cabot and Rollins Corporation.*

Chapter 74, Resolves of 1923, provided:

"That the attorney general, the state treasurer and the commissioner of public works shall constitute a board of review for the investigation of the claim of Holbrook, Cabot & Rollins Corporation against the commonwealth



for damages claimed on account of the construction of the commonwealth dry dock at South Boston, as more particularly set forth in the report of the arbitration board appointed to consider said claim, whose report is contained in house document No. 1173 of nineteen hundred and twenty-one, and for this purpose may hold hearings, take evidence, administer oaths and issue subpoenas; and if, after investigation of said claim, said board of review shall determine that in equity and in good conscience the commonwealth should respond in damages, there shall be paid from the state treasury for settlement in full of such claim from the Development of the Port of Boston Investment Fund for the purposes of this resolve, such amount not exceeding two hundred thousand dollars as said board shall determine to be just and reasonable under all the circumstances of the case.

Any payment made under authority of this resolve shall be made from the fund established by section four of chapter two hundred and twenty-five of the acts of nineteen hundred and twenty."

To December 1, 1923, the board had not made its findings under the resolve.

#### THE COMMONWEALTH FLATS AT EAST BOSTON.

##### *Aircraft Landing Field.*

The work of building this field and its approaches, under contract of Aug. 15, 1922, with Vincent N. Bellizia was completed Aug. 29, 1923. The first airplane was landed at the field on June 4, 1923, and on the following day the first official landing was made by a lieutenant of the United States Army. The field was officially opened by the United States government on Sept. 8, 1923.

In accordance with the provisions of chapter 404, Acts of 1922, the lease of this field to the United States was renewed until June 30, 1924, at a rental of \$1 per year.

The work of building foundations and erecting hangars under contract of Sept. 1, 1922, with Coleman Bros., Inc., was hindered by weather conditions and by delays in the receipt of materials. The foundations for both buildings were completed in July and one hangar finished Sept. 6, 1923. This hangar was occupied by the Massachusetts National Guard on Sept. 7, 1923. The work upon the other hangar is now nearly completed. To facilitate access to this field sub-grading was done in the extension of Maverick Street and a cinder road built easterly from Jeffries Street.

Amount expended during the year, \$40,438.38.

Total expenditure to Dec. 1, 1923, \$56,547.65.

A culvert was built to take care of the necessary drainage and an old sea wall rebuilt to hold the filling in the entrance roadway. This work was completed Feb. 1, 1923, at a cost of \$350.

Two permits have been granted during the year for the use of lots of land westerly and southerly of the area leased to the United States. The Aero Club of Massachusetts on June 7, 1923, was given authority to build a club house for use in connection with this field and on Aug. 21, 1923, permission was granted to Edward T. O'Toole to occupy an area for a gasoline oil service station, machine shop and individual hangars.

##### *Dredging, Filling and Bulkheads.*

The filling of the flats at East Boston has been continued during the year under contract of June 20, 1923, with the Atlantic, Gulf and Pacific Company. Dredging has been continued to enlarge the westerly end of the central basin. This dredging has been done to depths varying from 15 feet to 31 feet at mean low water over an area about 1,200 feet by 2,000 feet. The material excavated has been used for filling to extend the easterly dike between the central basin and the bulkhead on the main ship channel. This dike has now been carried nearly to the bulkhead on the channel front. During the year material to the amount of 800,000 cubic yards has been dredged and deposited. About 14 acres have

been added this year to the filled land of the Commonwealth, making a total of about 134 acres.

To strengthen the double bulkhead westerly of Governor's Island a contract was made on Feb. 20, 1923, with Coleman Bros., Inc., to place filling behind this bulkhead and to surface certain portions of land already filled. A channel was dredged in front of the bulkhead to allow access for the scows, and the excavated material was rehandled and placed back of the bulkhead. During the year 65,817 cubic yards of material have been rehandled from scows and placed back of the bulkhead providing back-filling for a length of about 800 feet. The work is now in progress.

The two sections of timber bulkhead built under contract of June 22, 1922, with the William L. Miller Company were completed Feb. 16, 1923, at a cost of \$45,256.80.

#### *East Boston Rail Connections.*

The work of building a railroad track under contract of Aug. 7, 1922, with the J. F. Kennedy Company was practically completed during the year. Two sections of main line track have been built and three connections with existing service tracks.

The westerly section, about 3,080 feet long, connects with the tracks of the Boston and Albany Railroad a little southerly of Prescott Street and extends southerly and easterly to the location of the Boston, Revere Beach and Lynn Railroad. From this portion of the main line three connecting service tracks extend, two serving the Meade-Morrison Manufacturing Company, and one the Edison Lamp Works of the General Electric Company.

The easterly section begins about 25 feet easterly of the location of the Boston, Revere Beach and Lynn Railroad and continues easterly in the right of way 60 feet wide acquired by the taking of July 5, 1922, under the provisions of chapter 494 of the Acts of 1921, and over filled land of the Commonwealth for a total length of 1,592 feet.

A contract was made Jan. 26, 1923, with W. S. Rendle and Son Company to build a trestle for the crossing at grade of the Commonwealth Railroad and the Boston, Revere Beach and Lynn Railroad. This work was completed June 15, 1923, at a cost of \$4,620.

#### COMMONWEALTH PIER NO. 1 AT EAST BOSTON.

On Nov. 22, 1923, a contract was made with Maurice M. Devine for painting the exterior of the wooden shed at this pier and certain inside and outside surfaces for the lump sum of \$1,925.

#### ANCHORAGE BASIN.

In 1920 the most westerly of the dolphins at this basin had been so often demolished that it was decided not to rebuild it. During the present year complaints were received regarding the pile stumps remaining at the site of this dolphin. Under an agreement with the Bay State Dredging and Contracting Company these pile stumps were removed and 355 cubic yards of silt and clay dredged at the location. This work was completed July 21, 1923, at a cost of \$500.

In Sept. the Maritime Association of the Boston Chamber of Commerce requested the dredging to a depth of 30 feet at mean low water of the triangular area between the anchorage basin and the main ship channel in Boston Harbor. A survey of this strip showed two shoal areas with a depth of only 27 feet.

On Nov. 15, 1923, a contract was made with the Bay State Dredging and Contracting Company to dredge to the depth of 30 feet below mean low water about 27,000 cubic yards of material between the anchorage basin and the main ship channel. The contract prices are: for dredging and disposing of the material, 44 cents per cubic yard, scow measurement; for removing and disposing of all boulders \$20 for each cubic yard.

This dredging is now in progress.

Amount expended during the year, \$4,339.77.



## NEPONSET RIVER.

The Department was authorized by chapter 353, Acts of 1923, to dredge in this river between the new Neponset highway bridge and Godfrey's wharf in Milton, and to expend for this purpose a sum not exceeding \$50,000. No work was to be begun until a contribution of \$10,000 had been made by individuals or corporations and paid into the State Treasury.

The required contribution was received in the following amounts:

Milton Yacht Club . . . . .	\$250
Town of Milton . . . . .	1,000
Walter Baker & Co., Ltd. . . . .	1,000
Godfrey Coal Co. . . . .	5,000
Hallet & Davis Piano Co. . . . .	2,750
Total . . . . .	<hr/> \$10,000

On Aug. 20, 1923, a contract was made with the Bay State Dredging and Contracting Company to dredge to the depth of 6 feet below mean low water about 78,600 cubic yards of material in this river above the Neponset Avenue Bridge, in Boston, Quincy and Milton. From Neponset Avenue Bridge to Granite Avenue Bridge the channel is to be not less than 100 feet wide; from Granite Avenue Bridge to Godfrey's Coal Wharf not less than 75 feet wide and in front of Godfrey's Coal Wharf not less than 50 feet wide. In addition the mooring basin near Vose's Grove is to be dredged to the depth of 6 feet below mean low water. The contract prices for this work are: for dredging and disposing of the dredged material, 59½ cents per cubic yard, scow measurement; for removing and disposing of all boulders, \$20 for each cubic yard. This work is now in progress. Amount expended during the year, \$26,069.99. Total expenditure to Dec. 1, 1923, \$71,183.33.

## DREDGING OFF NEW HAVEN DOCKS, SOUTH BOSTON.

The work of dredging off these docks under contract of Oct. 23, 1922, with the Bay State Dredging and Contracting Company was completed Dec. 27, 1922. Amount expended during the year, \$16,330.53. Total expenditure to Dec 1, 1923, \$34,204.24.

## PEMBERTON POINT, HULL.

Chapter 440, Acts of 1923, authorized the Division to construct a breakwater at Pemberton Point for the purpose of protecting this point from erosion by the sea. No work was to be begun until the town of Hull and the county of Plymouth each contributed and paid into the State Treasury the sum of \$30,000. In accordance with the provisions of the act the town of Hull and the Plymouth County Commissioners filed with the Division certified copies of votes in acceptance of this act and in September paid into the State Treasury the required contributions.

A contract was made on Sept. 25, 1923, with William R. Farrell to build about 2,400 linear feet of concrete sea wall, together with jetties of concrete or riprap extending from a portion of the wall and heavy riprap in front of the remaining portion of the wall. The cost of this work is estimated to be approximately \$85,585.80. This work is now in progress. Amount expended during the year, \$25,933.62. Total expenditure to Dec. 1, 1923, \$26,185.22.

## QUINCY BAY.

On July 2, 1923, a contract was made with Dennis F. Crowley for breaking up and removing boulders from the flats easterly of the Quincy Shore Reservation at Atlantic, Quincy. The contract price was: for the removal of 46 boulders to an elevation of about one foot below the level of the flats at each boulder and disposal of the same, the lump sum of \$950.

By the terms of the contract all work was to be completed on or before Sept. 1, 1923. At that date the contractor had done no work. A little later in the month the work was begun but very little accomplished. In November



the contractor was formally notified, in accordance with the provisions of the contract, to discontinue all work because of this unnecessary and unreasonable delay. Arrangements are being made by the Division for the completion of this work under a new contract. Amount expended during the year, \$226.42.

## RIVERS, HARBORS, TIDE WATERS AND FORESHORES OUTSIDE OF BOSTON HARBOR.

For the improvement of rivers, harbors, tidewaters and foreshores outside of Boston Harbor, in accordance with the provisions of section 11, Chapter 91, General Laws, an appropriation of \$200,000 was available during 1923.

Petitions were filed with the Division during the year for surveys and improvements in the following localities: Allen's Harbor, Harwich; Annisquam River, Gloucester; Cape Poge Pond, Edgartown; Connecticut River, Hadley; First Cliff, Scituate; Gun Rock Point, Hull; Lobster Cove, Gloucester; Manchester Harbor, Manchester; Nantucket Harbor, Nantucket; Nobscusset Harbor, Dennis; Pleasant Bay and Namequoit River, Orleans, Chatham, Harwich; Saugus River, Revere; Scituate Harbor, Scituate; Third Cliff, Scituate; Town Cove, Orleans; Wessagussett Road, Weymouth; Westport Harbor, Westport.

Public hearings have been held, certain surveys and estimates of cost made, but no work has been done to carry out improvements petitioned for at Allen's Harbor, Harwich; Annisquam River, Gloucester; Cape Poge Pond, Edgartown; Connecticut River, Hadley; First Cliff, Scituate; Nantucket Harbor, Nantucket; Nobscusset Harbor, Dennis; Pleasant Bay and Namequoit River, Orleans, Chatham, Harwich; Saugus River, Revere; Scituate Harbor, Scituate; Wessagussett Road, Weymouth.

Information relating to work previously done in various rivers and harbors of the Commonwealth may be found in the annual reports of the Board of Harbor and Land Commissioners, the Commission on Waterways and Public Lands, in previous reports of this Division, and in the tables in the Appendix accompanying the present report. These tables show localities, character of work, appropriations and expenditures by the Commonwealth and certain appropriations and expenditures by the Federal government.

An account of the work done during the year 1923, for the improvement of rivers, harbors, tide waters and foreshores outside of Boston Harbor follows:

### BASS RIVER, DENNIS AND YARMOUTH.

An examination of the easterly jetty made in June showed the need for repairs. On July 19, 1923, a contract was made with William H. Connor and Son Company for the construction of about 970 linear feet of concrete wall upon the jetty at the easterly side of the entrance to Bass River. For furnishing all labor and materials and constructing the concrete wall, including the removal and disposal of old timber, furnishing of forms to remain in place, excavation and all incidental work, the contract price is \$22.70 for each cubic yard of concrete measured in place in the completed work. This work is now in progress. Amount expended during the year, \$4,045.77. Total expenditure to Dec. 1, 1923, \$93,150.51.

### BEVERLY HARBOR.

Chapter 221, Special Acts of 1919, authorized a contribution by the Commonwealth of \$50,000 toward the cost of the improvement of Beverly Harbor in accordance with a project of the Federal government for which a congressional appropriation of \$61,500 had been made. By Chapter 12, Resolves of 1922, the period for which the appropriation of \$50,000 is available was extended for three years. The treasurer of the Commonwealth on Jan. 10, 1923, forwarded to the Secretary of War the contribution of \$50,000 by the Commonwealth toward the cost of the work.

Work is now in progress in this harbor under a contract made Sept. 25, 1923 by the Federal government to provide for dredging a channel 24 feet deep at

mean low water. The proposed channel is to be dredged in two parts, an outer channel 250 feet wide and 800 feet long through the bar northerly of Salem Neck, and an inner channel extending from a point near Bar Beacon to a point about 400 feet below the Essex Bridge, a distance of 3,300 feet.

#### BRANT ROCK, MARSHFIELD.

In August an inspection was made of the sea wall along the easterly side of Ocean Street north of Brant Rock. The foundation of this wall, built substantially at the level of the beach, was found in danger of being undermined by heavy storms.

On Oct. 15, 1923, a contract was made with Frank H. Barry to include the construction of about 100 linear feet of concrete wall and 51 concrete spur jetties for the protection of this wall. The contract prices are: For furnishing materials and constructing the concrete wall, \$17 per cubic yard of concrete measured in the completed work; for furnishing materials and constructing concrete spur jetties, \$120 for each completed jetty fifteen feet in length; for furnishing materials and pointing up the exposed face of the sea wall, \$600 for the completed work. This work is now in progress. Amount expended during the year, \$54.54. Total expenditure to Dec. 1, 1923, \$5,456.50.

#### BUCKS CREEK, CHATHAM.

Hearing was held Feb. 28, 1923, upon the petition of the Selectmen of Chatham, and others, for the extension of the westerly jetty and for dredging. An examination showed a movement of sand around the end of the shorter and westerly jetty resulting in a shoaling of the channel.

On July 19, 1923, a contract was made with W. H. Connor and Son Company to dredge a channel 40 feet wide on the bottom and 4 feet deep at mean low water, and to build a pile and timber jetty in extension of the present westerly jetty. The contract prices are: for dredging channel and disposing of the dredged material, 70 cents for each cubic yard of material excavated, measured in situ; for furnishing materials and building pile and timber jetty, including pile cluster at outer end, connection with existing jetty, and all incidental work, \$18 per linear foot of pile and timber jetty in place.

Toward the cost of the work a contribution of \$1,000 has been made by the town of Chatham. Work under this contract will not begin until spring. Amount expended during the year, \$65.75. Total expenditure to Dec. 1, 1923, \$31,133.49.

#### COHASSET HARBOR.

Complaints during the summer were received regarding the shoaling of the entrance channel to this harbor. A survey made in July showed that the channel formerly dredged to a depth of 6 feet and a width of 90 feet has narrowed to 50 feet and has shoaled until the maximum depth at low water is about 5.5 feet.

On Aug. 16, 1923, a contract was made with William E. Burke to redredge the entrance channel to a depth of 6 feet at mean low water and to a width of 90 feet on the bottom. The contract prices for this work are: for dredging the channel and disposing of the dredged material, 60 cents for each cubic yard, scow measurement; for removing and disposing of boulders, \$20 for each cubic yard. The contractor has not yet begun this work. Amount expended during the year, \$127.66. Total expenditure to Dec. 1, 1923, \$57,111.68.

#### CONNECTICUT RIVER.

*Holyoke.* — During 1922 requests were received for protective work on the bank of Connecticut River in front of the Holyoke Canoe Club. A survey showed that the bank at this locality was wearing from the action of the river.

On Dec. 15, 1922, a contract was made with Daniel O'Connell's Sons for furnishing and placing in position about 750 tons of stone riprap on the westerly bank of Connecticut River north of Smith's Ferry. The contract price for this work was \$3.85 per ton of stone in place.



This work was completed April 2, 1923, and comprised grading and protection, between low water and the crest of the bank, of about 400 linear feet.

Toward the cost of this work the Holyoke Canoe Club made a contribution of \$600. Amount expended during the year, \$3,144.92. Total expenditure to Dec. 1, 1923, \$7,375.70.

*Northfield.* — In September the Division received a complaint regarding the encroachment of the river with resulting damage to property upon the west bank north of Schell's Bridge, Northfield. A survey showed considerable erosion and necessity for protective work.

On Nov. 22, 1923, a contract was made with Thomas Aquinas Dollard to furnish and place in position about 1,500 tons of stone riprap on the westerly bank of Connecticut River north of Schell's bridge in the town of Northfield. The contract price for furnishing and placing riprap, grading bank, removing fallen trees, drift, stumps and bushes and all incidental work, is \$3.00 per ton of stone in place in the completed work. The contractor has not yet begun this work. Amount expended during the year, \$98.10. Total expenditure to Dec. 1, 1923, \$98.10.

#### DUXBURY HARBOR.

In 1922 hearing was held upon a petition of Percy L. Walker, and others, for redredging the channel and anchorage basin in this harbor. The request for dredging was renewed this year with an assurance of contributions toward the cost.

On April 26, 1923, a contract was made with the Bay State Dredging and Contracting Company to dredge about 20,000 cubic yards of material to the depth of 6 feet at mean low water. The contract prices for this work were: for dredging and disposing of dredged material, 48 cents for each cubic yard, scow measurement; for removing and disposing of boulders, \$20 for each cubic yard. During the progress of this work additional dredging was authorized to ensure the removal of all shoals from the basin.

The work was completed Oct. 4, 1923. A contribution of \$1,000 was made toward the cost of this work by the town of Duxbury, and a contribution of \$1,000 by the members of the Duxbury Yacht Club. Amount expended during the year, \$14,631.54. Total expenditure to Dec. 1, 1923, \$42,602.29.

#### ELLISVILLE HARBOR, PLYMOUTH.

The jetty of timber crib work ballasted by stone, previously built at this harbor, was considerably damaged by storms during the winter. It has been rebuilt and the top of the structure covered with heavy wire mesh to assist in retaining the stone. This work was done at a cost of \$935.08. Amount expended during the year \$935.08. Total expenditure to Dec. 1, 1923, \$17,728.48.

#### ESSEX RIVER, ESSEX.

The work of dredging in this river under contract of Aug. 7, 1922, with the Bay State Dredging and Contracting Company was completed June 9, 1923. The channel is now 60 feet wide on the bottom, 6 feet deep at mean low water and about two and one quarter miles long, extending from the six-foot contour above Conomo Point to the highway at Essex. Amount expended during the year, \$37,876. Total expenditure to Dec. 1, 1923, \$76,304.33.

#### FALMOUTH HEIGHTS SEA WALL.

In the spring an inspection made of the sea wall in front of Terrace Gables Hotel showed dangerous cracks and gaps in the wall. Under an agreement with John A. Davis the necessary repairs were made at a cost of \$842.30. Amount expended during the year, \$842.30. Total expenditure to Dec. 1, 1923, \$51,409.13.

#### FALMOUTH INNER HARBOR.

In May of this year an inspection of the jetty on the westerly side of the entrance to the harbor showed two small gaps where the sand was still working out through the jetty. Under an agreement with John A. Davis these gaps were



closed by excavating the sand west of the jetty and pointing up the opening in the stone work with concrete. Amount expended during the year, \$170.86. Total expenditure to Dec. 1, 1923, \$108,707.03.

#### GLOUCESTER HARBOR.

The work of rock excavation in this harbor under contract of Sept. 22, 1922, with George T. Rendle was completed June 29, 1923. The contract provided for the removal of nine points or areas of ledge in the channel near Five Pound Island; three rocks near Parkhurst's Wharf; two isolated rocks in Harbor Cove near the Parmenter-Rice and Atlantic Halibut Company's wharves; one rock near the wharf of the Gloucester Fresh Fish Company on the southerly side of Harbor Cove; and three rocks near the head of the harbor, one near the entrance to the dock between the wharves of Frank C. Pearce Company and Gorton-Pew Fisheries Company, and the other two on the opposite side of the channel distant about 170 feet southeasterly from the outer end of the latter wharf. In addition to this work a point of ledge near Five Pound Island and seven boulders in this location were removed. Amount expended during the year, \$18,396.89. Total expenditure to Dec. 1, 1923, \$118,994.65.

*Annisquam River.*—In March the attention of the Division was called to a boulder northerly of the entrance to this river. An examination showed the boulder situated upon the easterly side of the channel and covered by about four and one-half feet of water at low tide. Under an agreement with the Bay State Dredging and Contracting Company this boulder was removed at a cost of \$50. Amount expended during the year, \$204.82. Total expenditure to Dec. 1, 1923, \$116,669.61.

*Lobster Cove.*—Hearing was held Feb. 28, 1923, upon a petition of William H. Poland, Jr., and others, for dredging at the entrance to this cove.

On July 5, 1923, a contract was made with the Bay State Dredging and Contracting Company to dredge an anchorage basin in this cove to a depth of 8 feet at mean low water. The contract prices were: for dredging and disposing of the dredged material at sea, 45 cents for each cubic yard measured in the scows in which it is placed for transportation; for removing and disposing of all boulders, \$18 for each cubic yard; for dredging and delivering the material in front of the Western Avenue sea wall in Gloucester Harbor, 45 cents for each cubic yard measured in the scows in which it is placed for transportation.

This work was completed Aug. 30, 1923. An area about 850 feet in length with an average width of 125 feet was dredged to a depth of 8 feet at mean low water. The amount of material excavated was approximately 31,635 cubic yards, of which about one-third was deposited in front of the sea wall at Western Avenue for use by the city of Gloucester for filling back of the wall. Amount expended during the year, \$14,788.93. Total expenditure to Dec. 1, 1923, \$50,239.86.

*Western Avenue Sea Wall.*—The work of building a sea wall at Western Avenue, Gloucester, in accordance with the provisions of chapter 502, Acts of 1922, under contract of Nov. 10, 1922 with the Bay State Dredging and Contracting Company, was completed June 7, 1923. This wall is 1,130 feet long and varies somewhat in height, with the elevation of the top 18 feet above mean low water at the westerly end and sloping to an elevation of 16 feet at the easterly end. To an elevation of 12 feet above mean low water the wall was built of granite, except for a short section at the westerly end where the granite was carried to a height of 14 feet. Above the granite the wall was built of concrete with a 12-inch coping on the water side. Three flight of stairs were constructed in the wall, one near the westerly end and two near the center. The top of the wall was protected by placing riprap for a distance of about 600 feet.

After the completion of this work the Division paid for the placing of 741.5 feet of galvanized rail along the coping of the wall and arranged for the deposit in front of the wall of a part of the material dredged at Lobster Cove. Amount expended during the year, \$56,629. Total expenditure to Dec. 1, 1923, \$60,000.



## GUN ROCK POINT, HULL.

Hearing was held Feb. 28, 1923, upon a petition of John L. Mitchell for repair of the breakwater at Gun Rock Point.

On June 20, 1923, a contract was made with the Rockport Granite Company to furnish and place about 2,500 tons of stone riprap to raise the height and to reshape this breakwater. The contract price for the work was \$3 for each ton of 2,000 pounds in place in the completed work.

This work was completed Aug. 24, 1923. The breakwater has been restored to its original elevation and a small amount of stone placed to extend the structure toward the shore. Amount expended during the year, \$7,572.41. Total expenditure to Dec 1, 1923, \$65,668.52.

## HERRING RIVER, WELLFLEET.

Under the provisions of chapter 511, Acts of 1907, and chapter 183, Acts of 1908, a dike was built near the mouth of this river. The work was completed in 1910 at a cost of \$21,800.73. After the completion of the dike the town and individuals interested spent considerable money in ditching and draining the land above the dike in an attempt to abate the pest of mosquitoes.

In 1922 the condition of these marshes above the dike was brought to the attention of the Division. An investigation made by the engineering department showed a marked reduction of the cross section of the river above High Toss bridge and a retardation of the flow of the stream by the growth of wild rice and the accumulation of mud.

In the spring of 1923 the Selectmen of Wellfleet and the Special Drainage Committee of the town filed a petition asking for work to provide proper drainage in the upper reaches of the river. The town later voted to assume all liability for damages on account of any dredging that the Commonwealth might do in this portion of the river.

On Oct. 3, 1923, a contract was made with William E. Burke for the excavation of a channel to straighten and deepen the existing channel and part of the branch channels of Herring River from a point near High Toss Bridge to the Herring Weir, a distance of about 4,600 feet. The excavation in the main channel is to be carried to elevation 3.0 at High Toss Bridge and to slope to elevation 4.0 at the Herring Weir. The excavation of the branch channels is to be to a depth of 2 feet below the present bottom. The depth of water in the excavated main channel is to be about 3 feet with the elevation of the water at High Toss Bridge 6.0. The contract price for this work is 54.7 cents per cubic yard measured in situ. The contractor has not yet begun work. Amount expended during the year \$226.69. Total expenditure to Dec. 1, 1923, \$22,027.42.

## MANCHESTER HARBOR.

Hearing was held Apr. 12, 1923, upon a petition of the Selectmen of Manchester for dredging to widen the present channel in this harbor.

On June 20, 1923, a contract was made with the Bay State Dredging and Contracting Company for dredging an anchorage basin 350 feet long and 100 feet wide and widening the entrance channel 50 feet on the southerly side of Glass Head at the entrance to the harbor. All dredging was to be done to a depth of 6 feet at mean low water. The contract prices for this work were: for dredging channel and basin and disposing of the dredged material, 41 cents for each cubic yard measured in the scows in which it is placed for transportation; for removing and disposing of all boulders \$15 for each cubic yard.

This work was completed Sept. 14, 1923. Toward the cost of the work a contribution of \$6,500 was made by the town of Manchester, and a contribution of \$1,000 by the Manchester Yacht Club.

The dredging widened the entrance channel 50 feet on the easterly side, provided an excavated triangular area of about 22,500 square feet at the junction of the present entrance channel with the old entrance channel, and gave an anchorage basin 350 feet long and 100 feet wide in front of the wharf of

the Manchester Yacht Club. Amount expended during the year \$14,255.24. Total expenditure to Dec. 1, 1923, \$123,333.75.

#### PLYMOUTH HARBOR.

Chapter 46, Resolves of 1923, authorizes the Division to co-operate with the War Department of the United States in the improvement of Plymouth Harbor and provides for the payment of not exceeding \$51,000 by the Commonwealth to the Federal government upon the appropriation of an equal amount for this purpose by Congress. This payment was made by the Commonwealth during the year.

The project of the Federal government comprises dredging in extension of the present channel in this harbor, but no contract for the work has yet been made. Total expenditure to Dec. 1, 1923, \$274,705.87.

#### PROVINCETOWN SHORE PROTECTION.

On Nov. 19, 1923, the Division of Waterways and Public Lands and the Division of Highways, acting jointly, made a contract with Nickerson and Edwards for placing about 4,500 tons of stone riprap weighing from one-half ton to two tons, backed up with about 2,000 tons of stone chips along the shore in front of the State highway in Provincetown, filling with sand the spaces back of the riprap and paving with about 1,600 tons of stone chips the surface between the riprap and the bituminous roadway. The contract prices for this work are: for furnishing and placing heavy stone riprap, \$4.745 for each ton of 2,000 pounds in the completed work; for furnishing and placing stone chips in back of and under the heavy riprap and as paving on the surface of fill back of the wall, \$4.745 for each ton of 2,000 pounds in the completed work; for all excavation including the disposal of the excavated material as filling back of the riprap, 74 cents for each cubic yard of material measured in place in its original position before excavating; for all sand furnished and placed as filling back of the riprap including all grading, compacting and incidental work, \$1.50 for each cubic yard of material measured in its original position before excavating. The contractor has not yet begun this work.

#### SALTERS POINT, DARTMOUTH.

Hearing was held Feb. 28, 1923, upon a petition of Arnold Scott, and others, for extension of the breakwater at Salters Point.

On Aug. 20, 1923, a contract was made with the Bay State Dredging and Contracting Company to furnish and place about 6,500 tons of heavy stone riprap in extension of the existing breakwater, at a contract price of \$3.84 for each ton of 2,000 pounds in place in the completed work.

This work was completed Oct. 2, 1923. About 7,211 tons of stone riprap was placed in an extension 209 feet long. Toward the cost of the work a contribution of \$3,000 was made by the Salters Point Improvement Association. Amount expended during the year, \$27,929.98. Total expenditure to Dec. 1, 1923, \$42,939.57.

#### SCITUATE SHORE PROTECTION.

The work of protecting the shores in the town of Scituate from damage by the sea has been continued during the year under the provisions of chapter 585, Acts of 1920.

*Cedar Point, Scituate.* — Hearing was held Feb. 28, 1923, upon a petition of the Selectmen of Scituate, the Plymouth County Commissioners, and others, for the construction of a breakwater to protect the westerly shore of Cedar Point.

On June 20, 1923, a contract was made with the Bay State Dredging and Contracting Company for furnishing and placing about 8,550 tons of stone riprap in a jetty to be built in Scituate Harbor. The contract price for this work was \$3.60 for each ton of 2,000 pounds in place in the completed work.

This work was completed Aug. 8, 1923, at a cost of \$32,169.94. A jetty about 500 feet long has been built, with a stone beacon at the westerly end extending five feet above the level of the structure.



*Glades Sea Wall.*— Under an agreement with Frank H. Barry two holes in the beach resulting from excavation during the work of building this wall, were filled at a cost of \$546.75.

In the fall about twenty tons of stone riprap were placed in front of a section of the wall where the beach is low. This work was done under an agreement with Arthur J. Mitchell at a cost of \$99.

*North Scituate Sea Wall.*— In August the Selectmen called the attention of the Division to the condition of the jetties supporting the sea wall along Surfside Avenue. An examination found these jetties badly damaged by the sea, either broken, overturned or cut away.

On Oct. 15, 1923, a contract was made with Frank H. Barry to include the construction of 14 concrete spur jetties in front of this wall. The contract price for furnishing materials and constructing the concrete spur jetties, including all excavation, backfilling and incidental work is \$175 for each completed jetty twenty-five feet in length.

This work is now in progress. The amount expended during the year is \$2,218.17.

*Third Cliff.*— The work of placing riprap protection at this cliff under contract of Feb. 10, 1922, with W. H. Connor and Son Company was resumed in January of this year. The work is not yet entirely completed but is to be carried on during the coming winter. During the year \$45,273.27 has been expended for this work.

At a conference held in November with the Plymouth County Commissioners and the Selectmen of Scituate it was decided to continue the work of riprap protection at this cliff. In accordance with this decision a contract was made on Nov. 23, 1923, with the Fitzgibbon Company to place about 8,000 tons of stone riprap to protect the face of a portion of the bluff at this cliff at a contract price of \$3.94 per ton for each 2,000 pounds of stone riprap furnished and placed. Work under this contract has not been begun.

#### WAQUOIT BAY, FALMOUTH AND MASHPEE.

An examination was made in January of the breakwater built by the Commonwealth at the entrance to this bay. It was found that about 150 feet of the timber jetty at the inner end of the stone structure had been destroyed and a channel cut by the sea through the gap. Such conditions might easily result in the destruction of the entire breakwater in a severe southerly storm.

On Feb. 2, 1923, a contract was made with William E. Burke to furnish and place about 1,500 tons of stone riprap and chips at a contract price of \$6.39 for each ton of 2,000 pounds in place in the completed work. During the progress of the work it was found necessary to increase the amount of stone to ensure adequate protection.

The entire work was completed Sept. 15, 1923. The break in the structure has been closed, about 40 tons of riprap placed to protect the end of a timber spur east of the jetty, and about 55 tons of stone placed on the bank at the inshore end of the breakwater on the channel side. Amount expended during the year, \$22,854.45. Total expenditure to Dec. 1, 1923, \$54,139.85.

#### WEST HARWICH.

The work of building a stone jetty east of the entrance to Herring River was completed Oct. 20, 1923. This jetty has been built about 1,750 feet east of said entrance and is about 450 feet long with a stone beacon rising four feet above the structure at the outer end. Amount expended during the year, \$11,048.94. Total expenditure to Dec. 1, 1923, \$11,089.19.

#### WESTPORT HARBOR.

A petition was filed in June by the Selectmen of Westport asking for work to prevent further shoaling of the channel at this harbor. After a survey it was decided that a stone jetty on the easterly side of the entrance would prevent further erosion of the shore and shoaling of the channel.

On Aug. 16, 1923, a contract was made with William E. Burke to furnish

and place about 2,700 tons of stone riprap and chips in a stone jetty on the easterly side of the entrance, at a contract price of \$6.60 for each ton of 2,000 pounds in place in the completed work. This work is now in progress. Amount expended during the year, \$2,571.09. Total expenditure to Dec. 1, 1923, \$2,571.09.

#### WITCHMERE HARBOR, HARWICH.

An inspection made at this harbor in January found the fence at the inshore end of the easterly jetty undermined, and the jetty itself considerably damaged. It was decided to reconstruct the inshore end of the structure by building a timber crib about 72 feet long filled with stone riprap. This work was done under an agreement with Nickerson and Freeman. Amount expended during the year, \$550. Total expenditure to Dec. 1, 1923, \$38,555.

### MISCELLANEOUS.

#### GREAT PONDS.

Jurisdiction over great ponds belonging to the Commonwealth was conferred upon the former Board of Harbor and Land Commissioners by chapter 318, Acts of 1888. This act applies to ponds containing in their natural state ten or more acres of land. Authority to sell and convey or lease, subject to the approval of the Governor and Council, any of the islands owned by the State in great ponds, was later conferred by chapter 379, Acts of 1904, now section 2, chapter 91, General Laws.

During the year the Division has considered matters relating to: Alum Pond, Sturbridge; Ashumet Pond, Falmouth and Mashpee; Beaver Pond, Bellingham; Chilmark Pond, Chilmark; Cranberry Meadow Pond, Charlton and Spencer; Greenwater Pond, Becket; Jordan Pond, Shrewsbury; Kingsbury Pond, Norfolk; Lake Chaubunagungamaug, Webster; Lake Congamond, Southwick; Long Pond, Blandford; Long Pond, Lakeville; Mascuppie Lake, Dracut and Tyngsborough; Maxey's Pond, Nantucket; Nuttings Pond, Billerica; Rice Pond, Ashburnham; Seymour's Pond, Brewster and Harwich; Shiverick's Pond, Falmouth; South End Pond, Millis; Spy Pond, Arlington; Stockbridge Bowl, Stockbridge.

A list of the lakes and ponds of the State with areas of ten or more acres, given by counties, is printed in the report of the Commission on Waterways and Public Lands on "Water Resources of Massachusetts, 1918."

Surveys have been made during the year of the following ponds:

NAME.	Town.	Area surveyed (Acres).	Natural Area (Acres).	Maximum Depth (Feet).
Queen Sewell Pond . . . . .	Bourne . . . . .	17.3	17.3	24.4
Mill Pond . . . . .	West Barnstable . . . . .	13.9	10.3	3.3
South End Pond . . . . .	Millis . . . . .	28.2	21.03	8.2
Lawrence Pond . . . . .	Sandwich . . . . .	138.2	138.2	26.8
Triangle Pond . . . . .	Sandwich . . . . .	84.3	84.3	33.4
Spectacle Pond . . . . .	Sandwich . . . . .	93.2	93.2	22.9
Big Hog Pond . . . . .	Sandwich . . . . .	10.9	10.9	—
Alum Pond . . . . .	Sturbridge . . . . .	199.5	179.0	43.5

Alum Pond was found in its present condition to have been raised about 6 feet by the construction of a dam at the outlet in order to store water for use in developing water power. Amount expended during the year, \$1,964.66. Total expenditure to Dec. 1, 1923, \$6,888.69.

#### ACCESS TO GREAT PONDS.

Chapter 453 Acts of 1923, provides as follows:

"Chapter ninety-one of the General Laws is hereby amended by inserting after section eighteen the following new section:— *Section 18A.* Upon petition of ten citizens of the commonwealth that in their opinion public necessity requires a right of way for public access to any great pond within the commonwealth, the division of waterways and public lands of the department of public



works and the attorney general or a representative designated by him sitting jointly shall hold a public hearing and receive such evidence thereon as may be presented to them. The joint board may make such additional investigation as it deems desirable and if it appears to said board that such a right of way exists it shall present a petition to the land court for registration of the easement. If it appears that no right of way exists it shall submit a report, together with recommendations thereon, to the general court on or before January first of the following year. This section shall not apply to any body of water used as a source of water supply by the commonwealth or by any town or district, or water company, nor shall it affect the right of the commonwealth or any town or district or water company to the use and control of the waters of any such pond for the purposes of a water supply, nor shall it affect or diminish any existing right to the use of the water of any such pond for mercantile or manufacturing purposes."

During the year one petition was filed under the provisions of this act. The joint board gave a hearing Oct. 24, 1923, upon the petition of Edwin A. Staples and others regarding the necessity for public access to the shores of Long Pond in the town of Lakeville. After considering the evidence presented at this hearing the joint board found that Long Pond is used as a source of water supply by the city of Taunton and dismissed the petition for lack of jurisdiction.

#### PROVINCE LANDS.

The territory belonging to the Commonwealth known as the Province Lands at Provincetown comprises about 3,290 acres lying northerly and westerly of a line described in chapter 470, Acts of 1893. By the terms of this act the Board of Harbor and Land Commissioners was given general care and supervision of this area.

Reclamation work has been carried on under the direction of a superintendent since 1894. To check the movement of the sand the barren dunes are first covered with brush or planted with beach grass. The grass is pulled in bunches about 2 inches thick and transplanted in rows about 4 feet apart and 6 inches deep. This transplanted grass lives between four and five years. This work is followed and reinforced by the transplanting of trees and shrubs.

During the year work on these lands has been continued in accordance with these methods. Thirty-eight acres of sand dunes have been covered with brush, and 8 acres of bayberry transplanted. In addition, 50,000 Scotch pines and 25,000 pines on the sod have been transplanted.

The sum of \$182.70 has been paid into the State treasury during the year from licenses issued for cultivating and picking cranberries on the bogs and for mowing meadowlands. Amount expended during the year, \$4,374.21. Total expenditure to Dec. 1, 1923, \$97,677.89.

#### CAPE COD CANAL.

##### *Public Terminal.*

Chapter 462, Acts of 1922, authorizes and directs the Division to determine the location along the line of the Cape Cod Canal or elsewhere in the town of Bourne or Sandwich, where, in its opinion, it is advisable to build a public terminal which shall include a pier and approaches, and such equipment, appliances and rail connections as it deems necessary, and to do such other work as may be necessary and advisable to carry out the purposes of the act.

Public hearings have been held as follows: On May 10, 1923, in the town of Bourne in the county of Barnstable; and on June 21, 1923, in the town of Middleborough in the county of Plymouth. The Division has also made examinations for the purpose of determining the location of the landing.

Upon taking up, in 1923, the matter of location it appeared that although Congress had authorized the Secretary of War to enter into negotiations for the purchase of the canal, and the Boston, Cape Cod and New York Canal Company had agreed to dispose of the Canal to the Federal government no conclusive action by Congress with respect to such purchase has been taken. Sub-



sequent to the public hearings held as aforesaid, the views of the authorities at Washington were sought with respect to the possible effect which the selection of a location by the Division might have upon the future improvement or operation of the canal, should it come into the possession of the Federal government.

In October, 1923, the Division was informed, in effect, that if the canal is purchased by the United States and it is found advisable in the future to increase the width of channel and make this increase symmetrically along the existing center line of the canal, it would bring the channel close enough to the proposed terminal to interfere to some extent with navigation in this section. The Division was further informed that studies which have been made are not sufficiently complete to permit the formulation of any definite statement as to the details of construction that would be required for the improvement of the channel, and, therefore, it was impossible to state what effect the proposed terminal would have on any enlargement that might be undertaken.

In view of the uncertainty as to the future ownership and improvement of the canal the Division has concluded to defer, for the present, any action with respect to a formal determination of the location of a public terminal under the provisions of chapter 462 aforesaid.

#### CONSERVING AND EQUALIZING THE FLOW OF WATER IN RIVERS AND STREAMS.

By chapter 359, Acts of 1909, chapter 564, Acts of 1912, and chapter 84, Resolves of 1917, co-operation was established between the Commonwealth and the Water Resources Branch of the United States Geological Survey, whereby data relating to the gauging of streams within the Commonwealth and other work of a similar character carried on by the said survey have been obtained for use by the Division, said data being available for other Departments of the Commonwealth.

Toward the cost of this work the Commonwealth has paid during the year \$3,000.

#### TOPOGRAPHICAL MAP OF MASSACHUSETTS, TOWN BOUNDARY ATLASES OF THE BOUNDARY LINES OF CITIES AND TOWNS, AND OTHER MAPS.

Under authority of section 33, chapter 91, General Laws, as amended by section 2, chapter 57, Acts of 1923, and under previous laws, 4,956 sections of the topographical map of Massachusetts, 37 maps of Massachusetts, 1917, 37 maps of Boston Inner Harbor, 1 map of the Cape Cod Canal, 1 map of Provincetown and 10 atlases of the boundary lines of cities and towns, have been sold during the year ending Nov. 30, 1923, for which \$694.71 was received and paid into the treasury of the Commonwealth.

Two boundary atlases were distributed during the year under authority of chapter 360, Acts of 1900, as amended by chapter 484, Acts of 1909.

#### RE-ESTABLISHMENT OF CERTAIN TRIANGULATION STATIONS.

By section 33, Chapter 91, General Laws, the Division is authorized to make such surveys and to do such other work as may be required by any order of the Land Court, to re-establish and permanently mark certain triangulation points and stations previously established in connection with the topographical survey of the Commonwealth, and the town boundary survey, which have been lost or destroyed, and to obtain the geographical position of such new points and stations as may be required from time to time by the Court.

During the year the location of the following triangulation stations was determined and permanently marked on the ground and the geographical positions furnished to the Land Court:—12 stations in Nantucket; 7 stations in Gloucester; 1 station in Sudbury; 1 station in Marlborough; 8 stations in Yarmouth; 9 stations in Dennis.

In addition the following triangulation stations were determined: 51 stations as basis for survey of Town Cove, Nauset Harbor, Pleasant Bay and vicinity, in the towns of Eastham, Orleans and Chatham; 4 stations to relocate the corner of Lunenburg, Lancaster and Shirley; 6 stations as a basis for a survey

of part of Westport Harbor, and also certain points to relocate and mark the part of the boundary line between the towns of Dennis and Yarmouth as determined by decision of the Land Court dated July 12, 1923.

#### LICENSES AND PERMITS.

During the year 112 licenses were granted for various work to be done in tidewaters, great ponds, Connecticut River and Merrimack River, and 105 permits for miscellaneous purposes. The Division also approved 54 permits granted by cities and towns for the construction and maintenance of fish weirs in tide water.

#### DIVISION OF METROPOLITAN PLANNING.

Chapter 399, Acts of 1923, amended chapter 28, General Laws, and provided that there shall be organized within the Metropolitan District Commission a Division of Metropolitan Planning, said Division to be in charge of seven commissioners, one of whom shall be an Associate Commissioner of Public Works. July 31, 1923, the Commissioner of Public Works, acting under the provisions of this act, designated Richard K. Hale, Associate Commissioner of the Division of Waterways and Public Lands, to act as a member of said Division of Metropolitan Planning.

#### SPECIAL REPORTS TO THE LEGISLATURE.

*Pilots for the Ports of the Commonwealth.* — Report made Jan. 1, 1923, by the Attorney-General and the Division of Waterways and Public Lands, acting jointly, under chapter 11, Resolves of 1922. (House No. 397 of 1923). This was followed by the passage of chapter 390, Acts of 1923, which affects various sections of chapter 103, General Laws.

*Old Colony Boulevard in Boston, and Certain Highways or Parkways in Quincy.* — Reports made Jan. 10, 1923, by the Department of Public Works and the Metropolitan District Commission under chapter 35, Resolves of 1922. (House No. 1131 of 1923.)

*Keeping the more Important Highways of the Commonwealth free of Snow and Ice.* — A preliminary report and final report were made by the Division of Highways in 1923. (Senate No. 366 and House No. 42 of 1923.)

*Slades Ferry Bridge, Fall River.* — Report made by the Department of Public Works and Public Utilities, acting jointly, May 1, 1923, under chapter 14, Resolves of 1923. (House No. 1504 of 1923.)

*Boulevard from River and Readville Streets in Boston to the Blue Hills Reservation in Milton.* — Report made Oct. 11, 1923, by the Department of Public Works and the Metropolitan District Commission, acting jointly, under chapter 19, Resolves of 1923. (House No. 16 of 1923.)

*Supervision and Regulation of the Business of transporting Persons, Freight and Property over Public Ways by Motor Vehicles.* — Chapter 35, Resolves of 1923, provides for an investigation by the Department of Public Works, and a report of the results of its investigation, together with draft of any proposed legislation, to the General Court not later than the second Wednesday in January, 1924. This report is in preparation and will be submitted in accordance with the resolve.

*Back Bay Lands, Removal of Certain Restrictions.* — Chapter 56, Resolves of 1923, provides for the appointment of a special commission consisting of the Attorney-General, the Commissioner of Public Works, and the Building Commissioner of Boston to investigate the advisability of removing certain restrictions imposed by the Commonwealth on land in the Back Bay District of Boston. A report of the findings of the Commission will be made on or before Dec. 15, 1923, as required by the resolve.

*Damage caused the Highways of the Commonwealth during the Winter of 1922.* — Report made April 12, 1923, by the Department of Public Works under an Order of the Senate adopted March 29, 1923. (Senate No. 358 of 1923.)



APPENDIX.

RECEIPTS DURING FISCAL YEAR 1923.

*Port of Boston Fund.*

Rent under leases and permits . . . . .	\$93,746 81	
Use of Commonwealth Pier No. 5 . . . . .	174,110 22	
Use of Commonwealth Pier No. 1 . . . . .	9,083 47	
Use of Maverick Street property . . . . .	600 00	
Use of Haywards Creek property . . . . .	453 50	
Inspection of dumping, Boston Harbor . . . . .	4,910 88	
Dumping at receiving basins . . . . .	8,258 74	
License charges . . . . .	15,508 93	
Sale of maps of Boston Inner Harbor . . . . .	18 50	
Pay station receipts . . . . .	221 37	
Sale of land, South Boston . . . . .	54,325 38	
Sundries . . . . .	49 32	
	<hr/>	\$361,287 12

*Waterways Fund.*

Inspection of dumping, outside Boston Harbor . . . . .	\$921 96	
License charges . . . . .	105 11	
	<hr/>	1,027 07

*Income, New Bedford Pier.*

Use of State pier, New Bedford . . . . .	14,625 00
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*Income, Division of Waterways and Public Lands.*

Use of Province Lands . . . . .	\$182 70	
Sale of sections of topographical map of Massachusetts . . . . .	676 21	
Certified copies of documents . . . . .	99 00	
Maps, plans and specifications . . . . .	161 20	
	<hr/>	1,119 11
Interest on bank accounts . . . . .		1,022 79
		<hr/>
		\$379,081 09



EXPENDITURES FOR DEVELOPMENT AND IMPROVEMENT IN BOSTON HARBOR, 1859-1923, INCLUSIVE.

PAYMENTS.	Boston Harbor.	Common-wealth Flats at East Boston.	Common-wealth Flats at South Boston.	Castle Island Filling.	Common-wealth Pier No. 5.	Common-wealth Pier No. 6.	Dry Dock.	Haywards Creek.	Mystic River.
To Nov. 30, 1922	\$1,672,577 59 <sup>1</sup>	\$2,681,870 21	\$4,831,808 11	\$721,732 98	\$3,997,990 20	\$1,088,305 79	\$3,164,651 15	\$385,684 88	\$410,029 26 <sup>2</sup>
1923.									
Appropriations.									
Aircraft landing field	-	27,626 40	-	-	-	-	-	-	-
Street and pier development	-	2,236 49	-	-	-	3,843 27	-	-	-
Streets, piers and railroad tracks, East Boston and South Boston	-	177 44	9,865 89	-	-	-	-	-	-
Dredging and filling	-	10,925 49	-	1,402 94	-	-	-	-	-
Extension of East Boston bulkhead	-	165,582 33	-	-	-	-	-	-	-
Haywards Creek development	-	22,078 27	-	-	-	-	-	274 73	-
Railroad tracks, East Boston	-	23,385 07	-	-	-	-	-	-	-
Boston Harbor, minor channels	16,431 10	4,355 42	37 56	-	-	-	-	-	1,740 17
Operation and maintenance of property	-	-	-	-	-	-	-	-	-
	\$1,689,008 69	\$2,938,237 12	\$4,841,711 56	\$723,135 92	\$3,997,990 20	\$1,092,149 06	\$3,164,651 15	\$385,959 61	\$411,769 43 <sup>2</sup>

<sup>1</sup> Contribution by Quincy Market Cold Storage and Warehouse Corporation, \$4,000.

<sup>2</sup> Contribution by Merrimac Chemical Company, \$19,182.50; contribution by Beacon Oil Company, \$50,000.00.

EXPENDITURES FOR DEVELOPMENT AND IMPROVEMENT IN BOSTON HARBOR, 1859-1923, INCLUSIVE — Concluded.

	Malden River.	Chelsea Creek.	Commercial Point, Dorchester Bay.	Commonwealth Pier No. 1, East Boston.	Commonwealth Pier No. 5, Operation and Maintenance.	Commonwealth Pier No. 1, Maintenance.	Maintenance of Other Property of Commonwealth.
To Nov. 30, 1922	\$32,268 70 <sup>1</sup>	\$60,340 73	\$53,213 10	\$1,191,274 26	\$505,847 81	\$40,381 89	\$290,830 99
1923.							
Appropriations.							
Aircraft landing field	-	-	-	-	-	-	-
Street and pier development	-	-	-	-	-	-	-
Streets, piers and railroad tracks, East Boston and South Boston	-	-	-	-	4,753 00	-	-
Dredging and filling	-	-	-	-	-	-	-
Extension of East Boston Bulkhead	-	-	-	-	-	-	-
Railroad tracks, East Boston	-	-	-	-	-	-	-
Boston Harbor, minor channels	-	179 15	-	-	-	-	-
Operation and maintenance of property	-	-	-	-	123,068 63	8,338 71	56,529 04
	\$32,268 70	\$60,519 88	\$53,213 10	\$1,191,274 26	\$633,669 44	\$48,720 60	\$347,360 03

Grand total, \$21,611,638.75.

<sup>1</sup> Expended by United States government, \$31,000; contribution by Standard Oil Company of New York, \$600.

EXPENDITURES AND CONTRIBUTIONS FOR IMPROVEMENT OF SMALL HARBORS AND CHANNELS WITHIN BOSTON HARBOR, UNDER THE DIRECTION OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS AND PUBLIC LANDS, AND ITS PREDECESSORS, FROM 1893 TO 1923, INCLUSIVE.

Locality and Character of Work.	Contributions by Municipality or Others.	Total Expenditure.
Cottage Park Channel, Winthrop, Dredging . . . . .	\$1,000 00	\$22,012 08
Dorchester, easterly shore, Boston, Dredging . . . . .	1,000 00	84,780 47
Harbor View, Boston, Dredging . . . . .	—	146 00
Hingham Harbor, Dredging . . . . .	6,500 00	41,595 12
Houghs Neck Channel, Quincy, Dredging . . . . .	3,500 00	28,489 58
Island End River, Everett, Survey . . . . .	—	264 10
Jeffries Point Channel, Dredging . . . . .	—	2,961 90
Mystic River (near Lawrence & Wiggin's wharf), Dredging . . . . .	—	5,927 70
Neponset River, Dredging . . . . .	10,000 00	71,183 33
Old Harbor Cove, Dredging . . . . .	—	9,821 69
Orient Heights Channels, Dredging . . . . .	—	45,323 67
Pemberton Point, Hull, Breakwater . . . . .	60,000 00	26,185 22
Pleasant Park Yacht Club Channel, Dredging . . . . .	—	3,154 92
Point Shirley, Dredging . . . . .	—	3,713 37
Quincy Bay, Dredging . . . . .	3,000 00	50,461 17
Shirley Gut, Boston and Winthrop, Dredging . . . . .	—	1,906 20
South Boston, southerly shore, Dredging . . . . .	—	129,542 08
Stony Beach, Hull, Sea wall . . . . .	—	11,522 02
Weir River, Hull, Dredging . . . . .	25,000 00	130,963 51
Wessagussett Channel, Dredging . . . . .	—	815 20
Weymouth Fore River, Dredging . . . . .	—	32,269 88
Winthrop Harbor Channels, Dredging . . . . .	1,700 00	39,783 58
	<hr/>	<hr/>
	\$111,700 00	\$742,822 79

EXPENDITURES AND CONTRIBUTIONS FOR RIVER AND HARBOR WORK FROM DEC. 1, 1922, TO NOV. 30, 1923, UNDER CHAPTER 91 OF THE GENERAL LAWS.

Location and Character of Work.	Contributions.	Expenditures.
Annisquam River, Survey . . . . .	—	\$204 82
Bass River, Jetty . . . . .	—	4,045 77
Brant Rock, Marshfield, Sea wall . . . . .	—	54 54
Bucks Creek, Channel and jetty . . . . .	\$1,000 00	65 75
Cohasset Harbor, Dredging . . . . .	—	127 66
Connecticut River, Holyoke, Riprap . . . . .	600 00	3,144 92
Connecticut River, Northfield, Riprap . . . . .	—	98 10
Duxbury Bay, Dredging . . . . .	2,000 00	14,631 54
Ellisville Harbor, Breakwater . . . . .	—	935 08
Essex River, Dredging . . . . .	—	37,876 00
Glades, North Scituate, Filling and riprap . . . . .	364 50	645 75
Gloucester Harbor, Removal of boulders . . . . .	—	50 00
Gloucester Harbor, Rock excavation . . . . .	—	18,346 89
Gloucester Harbor, Sea wall, Western Av. . . . .	35,000 00	56,629 00
Great Ponds, Survey . . . . .	—	1,964 66
Improvement of rivers and harbors, General expenses . . . . .	—	1,655 24
Lobster Cove, Gloucester, Dredging . . . . .	—	14,788 93
Manchester Harbor, Dredging . . . . .	7,500 00	14,255 24
Nahant, Survey . . . . .	—	82 15
Namequoit River & Pleasant Bay, Survey . . . . .	—	6,265 21
Nantucket, Survey . . . . .	—	289 25
Nauset Harbor and Town Cove, Survey . . . . .	—	2,671 24
Nobscusset Harbor, Dennis, Dredging . . . . .	—	1,423 50



EXPENDITURES AND CONTRIBUTIONS, ETC. — *Concluded.*

Location and Character of Work.	Contributions.	Expenditures.
North Scituate, Spur jetties . . . . .	—	\$2,218 17
Palmers Pond, Falmouth, Survey . . . . .	—	358 76
Pines River, Survey . . . . .	—	904 80
Salters Point, Breakwater . . . . .	\$3,000 00	27,929 98
Scituate, Sea walls . . . . .	5,684 98	—
Scituate, Riprap at Cedar Point . . . . .	17,516 78	32,169 94
Scituate, Third Cliff, Riprap . . . . .	25,113 08	45,334 31
Waquoit Bay, Jetty & riprap . . . . .	—	7,660 80
West Harwich, Jetty . . . . .	—	11,048 94
Westport Harbor, Jetty . . . . .	—	2,571 09
Witchmere Harbor, Jetty . . . . .	—	550 00
	<hr/>	<hr/>
	\$97,779 34	\$310,998 03

## EXPENDITURES AND CONTRIBUTIONS FROM 1893 TO 1923, INCLUSIVE, FOR RIVER AND HARBOR WORK, UNDER THE DIRECTION OF THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF WATERWAYS AND PUBLIC LANDS, AND ITS PREDECESSORS (EXCEPTING BOSTON HARBOR).

Locality and Character of Work.	Contributions by Municipality or Others.	Total Expenditure.
Acushnet River, Inspection and dredging . . . . .	—	\$118,764 85
Allens Harbor, Harwich, Surveys . . . . .	—	302 00
Allens Pond, Dartmouth, Survey . . . . .	—	195 95
Annisquam River, Gloucester, Dredging, removing ledges and riprap . . . . .	—	116,669 61
Apponagansett Harbor and River, Dartmouth, Sur- vey, dredging and stone breakwater . . . . .	—	55,786 05
Barnstable Harbor, Survey and dredging . . . . .	\$1,500 00	18,554 64
Bass River, Beverly, Dredging . . . . .	55,535 75	81,075 56
Bass River, Dennis and Yarmouth, Jetties, dredging and survey . . . . .	2,500 00	93,150 51
Beverly Harbor, Dredging . . . . .	—	50,000 00 <sup>1</sup>
Brant Rock, Marshfield, Sea wall . . . . .	—	5,456 50
Bucks Creek, Chatham, Jetties, survey and dredging . . . . .	2,500 00	31,133 49
Buzzards Bay, Falmouth, Survey . . . . .	—	166 11
Cataumet Harbor <sup>2</sup> . . . . .	—	—
Centerville River, Barnstable, Dredging . . . . .	1,500 00	7,603 22
Cohasset Harbor, Cohasset and Scituate, Break- water and dredging . . . . .	20,691 88	57,111 68
Concord River, Billerica, Removing boulders . . . . .	150 00	1,664 59
Connecticut River, Investigation of navigation and surveys . . . . .	—	6,970 99
Connecticut River, Improvement . . . . .	—	103 63
Connecticut River, Agawam, Protective work . . . . .	—	18,814 42
Connecticut River, Chicopee, Survey, wall and rip- rap . . . . .	640 00	25,789 02
Connecticut River, Hadley, Protective work and diversion wall . . . . .	500 00	97,740 94 <sup>3</sup>
Connecticut River, Hatfield, Dikes and riprap . . . . .	1,000 00	14,952 57
Connecticut River, Holyoke, Marking and lighting old piers . . . . .	—	975 92
Connecticut River, Holyoke, Dredging and pro- tective work . . . . .	1,015 00	7,375 70

<sup>1</sup> \$50,000 expended by the United States Government.<sup>2</sup> See Megansett Harbor.<sup>3</sup> From 1888, inclusive.



EXPENDITURES AND CONTRIBUTIONS, ETC. — *Continued.*

Locality and Character of Work.	Contributions by Municipality or Others.	Total Expenditure.
Connecticut River, Northampton, Protective work .	—	\$1,524 20
Connecticut River, Northfield, Riprap . . . .	—	98 10
Connecticut River, South Hadley, Wall . . . .	\$1,000 00	7,379 58
Connecticut River, West Springfield, Protective work . . . . .	—	11,919 27 <sup>1</sup>
Conservation of Waters, Investigation . . . .	—	44,765 92
Cotuit Harbor, Barnstable, Dredging and survey .	2,000 00	59,219 91
Cuttyhunk Harbor, Gosnold, Jetties and dredging .	9,000 00	70,754 18
Deacons Pond Harbor, Falmouth <sup>2</sup> . . . . .	—	—
Duxbury Bay and Harbor, Dredging . . . . .	2,000 00	42,602 29
East Bay, Osterville, Jetties, dredging and removing scows . . . . .	10,000 00	70,924 23
Edgartown Harbor, Survey . . . . .	300 00	3,000 76
Ellisville Harbor, Dredging . . . . .	—	17,728 48
Essex County beaches, Survey . . . . .	—	1,000 00
Essex River, Dredging . . . . .	—	76,304 33 <sup>3</sup>
Fall River Harbor, Improvement . . . . .	—	1,130 18
Falmouth Heights, Falmouth, Sea wall . . . .	13,000 00	51,409 13
Falmouth Inner Harbor, Dredging, jetties and wall	14,000 00	108,707 03
Fresh Water Cove, Gloucester, Dredging . . . .	3,300 00	17,477 53
Gloucester Harbor, Gloucester, Dredging and re- moving ledges . . . . .	7,500 00	118,994 65
Gloucester, Western Avenue, Sea wall . . . .	35,000 00	60,000 00
Great Ponds, Survey . . . . .	—	6,888 69
Green Harbor, Marshfield, Jetties, dredging and survey . . . . .	—	76,466 85
Gun Rock Point, Hull, Breakwater . . . . .	10,000 00	65,668 52
Harbor Cove, Gloucester, Survey and dredging .	866 00	19,394 73
Herring Creek, Scituate, Survey . . . . .	—	253 76
Herring River, Harwich, Jetties and dredging . .	2,500 00	56,992 16
Herring River, Wellfleet, Dikes and ditches . .	10,000 00	22,027 42
Housatonic River, Sheffield, Survey . . . . .	—	2,011 29
Hull, Sea wall and survey . . . . .	8,882 06	34,140 38
Humarock Beach, Scituate, Survey . . . . .	37,816 38	56,960 63
Hyannisport, Barnstable, Survey and breakwater .	2,500 00	65,017 76
Improvement of rivers and harbors, Engineering ex- penses . . . . .	—	19,078 89
Ipswich River, Ipswich, Jetty, wall, riprap and dredging . . . . .	1,000 00	48,318 92
Kings Beach, Swampscott, Removal of obstruction .	—	166 41
Lake Anthony, Oak Bluffs, Jetties and dredging .	5,000 00	75,531 24
Lake Quannapowitt, Wakefield, Investigation . .	—	345 32
Lewis Bay, Barnstable, Survey and dredging . .	—	28,963 21
Little Harbor, Marblehead, Dredging . . . . .	2,500 00	11,166 16
Little River, Gloucester, Survey . . . . .	—	862 93
Lobster Cove, Gloucester, Dredging . . . . .	1,500 00	50,239 86
Lynn Harbor, anchorage basin, Survey and dredging	5,200 00	121,588 07
Lynn Harbor and Saugus River, Dredging and filling	37,500 00	163,431 53
Manchester Harbor, Survey, jetties and dredging .	51,000 00	123,333 75
Mattapoissett, Survey . . . . .	—	255 48
Megansett Harbor, Dredging . . . . .	12,730 00	52,116 66
Menamsha Inlet, Chilmark and Gay Head, Jetties, dredging and sea wall . . . . .	700 00	78,039 50

<sup>1</sup> From 1891, inclusive.<sup>2</sup> See Falmouth Inner Harbor.<sup>3</sup> \$5,000 expended by the United States Government.

EXPENDITURES AND CONTRIBUTIONS, ETC. — *Continued.*

Locality and Character of Work.	Contributions by Municipality or Others.		Total Expenditure.
Merrimack River, Investigation and survey . . . . .	—		\$1,208 50
Mill River, Gloucester, Survey and dredging . . . . .	\$300 00		24,899 59
Mitchells River, Chatham, Survey . . . . .	—		322 96
Nahant, Survey . . . . .	—		82 15
Namequoit River and Pleasant Bay, Survey . . . . .	—		6,265 21
Nantucket Harbor, Dredging . . . . .	1,000 00		43,069 03
Nauset Harbor, Survey . . . . .	—		2,671 24
New Bedford Harbor, Dredging . . . . .	—		18,856 57
New Bedford State Pier, Pier, shed and dredging . . . . .	13,446 74 <sup>1</sup>		491,576 04
New Bedford State Pier, Operation and maintenance . . . . .	—		19,708 02
Newburyport Harbor, Survey . . . . .	—		115 97
Nobscusset Harbor, Dennis, Breakwater, dredging and riprap . . . . .	1,200 00		39,778 84
North River, Marshfield, Surveys and removing rocks . . . . .	1,800 00		8,658 75
North River, Salem, Survey . . . . .	—		704 52
Oak Bluffs, Removing rocks . . . . .	—		594 95
Oak Bluffs, Sea wall . . . . .	2,500 00		36,574 25
Onset Bay, Wareham, Survey and dredging . . . . .	1,000 00		15,295 89
Orleans, Survey . . . . .	—		104 18
Palmers Pond, Falmouth, Survey . . . . .	—		358 76
Pamet River, Truro, Survey, dredging and repairing jetties . . . . .	1,200 00		192,459 95
Paskamansett River, Dartmouth, Dredging and jetty . . . . .	—		5,227 68
Penikese Island, Gosnold, Pile wharf and survey . . . . .	—		5,192 95
Pines River, Survey . . . . .	—		904 80
Plum Island River, Newbury and Newburyport, Survey . . . . .	—		983 31
Plymouth Harbor, Dredging . . . . .	71,794 55		274,705 87 <sup>2</sup>
Popponessett Bay, Dredging . . . . .	—		46,252 33
Powow River, Dredging channel and riprapping wall . . . . .	—		502 94
Province Lands, Provincetown, Reclamation . . . . .	—		97,677 89
Provincetown Harbor, Survey . . . . .	—		1,217 78
Quansett Harbor, Orleans, Survey . . . . .	—		194 50
Red Brook Harbor, Bourne, Removing Pier . . . . .	—		275 00
Revere, Stone breakwater . . . . .	—		60,397 93
Rock Harbor, Orleans, Dredging . . . . .	400 00		12,492 71
Rockport Harbor, Dredging and removing rocks . . . . .	—		13,749 02
Salem Harbor, Survey . . . . .	—		1,050 05
Salt Pond River, Eastham, Survey . . . . .	—		210 11
Salters Point, Dartmouth, Breakwater . . . . .	4,500 00		42,939 57
Sandwich Harbor, Dredging channel, riprap and jetties . . . . .	—		80,579 84
Saugus River, Lynn and Saugus, Survey and dredg- ing . . . . .	2,000 00		20,845 17
Scituate, Shore protection . . . . .	91,666 28		212,369 81
Scituate Harbor, Dredging . . . . .	8,300 00		104,976 92
Scorton Harbor, Sandwich, Jetty and dredging . . . . .	500 00		17,774 34
Sesuit Harbor, Dennis, Jetty . . . . .	1,500 00		24,555 10
Sippican Harbor, Marion, Survey . . . . .	—		7 17
Smith's Cove, Gloucester, Survey and dredging . . . . .	—		5,163 02
South River, Salem, Dredging . . . . .	3,000 00		13,462 66

<sup>1</sup> Paid by surety company.<sup>2</sup> \$57,000 expended under direction of the United States Government.



EXPENDITURES AND CONTRIBUTIONS, ETC. — *Concluded.*

Locality and Character of Work.	Contributions by Municipality or Others.	Total Expenditure.
South Watuppa Pond, Fall River, Fenders and exca- vation . . . . .	—	\$203 42
Stage Harbor, Chatham, Dikes and survey . . . . .	—	10,803 01
Taunton River, Survey and dredging . . . . .	\$12,500 00	28,697 18
Taunton-Brockton waterway, Investigation . . . . .	—	5,278 18
Taunton River-Boston Harbor canal, Survey . . . . .	—	9,932 75
Taunton River-Massachusetts Bay canal, Survey . . . . .	—	11,786 71
Vineyard Haven Harbor, Repairing sea wall . . . . .	2,380 50	11,945 01
Vineyard Haven Harbor, Tisbury, Breakwater and dredging . . . . .	1,000 00	45,518 25
Waquoit Bay, Falmouth, Breakwater wall and bulkhead . . . . .	2,000 00	54,139 85
Wareham River, Survey and dredging . . . . .	5,000 00	42,567 93
Warrens Cove, Plymouth, Sea wall . . . . .	9,713 98	24,761 99
Watch Hill, Chatham, Survey and riprap . . . . .	—	14,968 75
Wellfleet Harbor, Survey and dredging . . . . .	1,500 00	17,600 29
West Bay, Barnstable and Osterville, Jetties and dredging . . . . .	10,000 00	88,420 36
West Falmouth Harbor, Falmouth, Dredging . . . . .	—	24,386 18
West Harwich, Jetty . . . . .	3,000 00	11,089 19
Westfield River, Survey and jetties . . . . .	—	6,037 29
Westport Harbor, Jetty extension . . . . .	—	2,571 09
Wild Harbor, Falmouth, Jetty and dredging . . . . .	5,000 00	36,137 71
Winthrop Shore, Sea walls and protective work . . . . .	3,000 00	20,058 48
Witchmere Harbor, Harwich, Jetties and dredging . . . . .	1,000 00	38,555 00
Woods Hole Great Harbor, Falmouth, Dredging . . . . .	1,500 00	6,968 86
Wrecks, Removal from tide water . . . . .	—	9,184 93
Yarmouthport Harbor, Survey . . . . .	7,000 00	95,977 37
	<hr/>	<hr/>
	\$645,029 12	\$5,319,161 46

FEDERAL APPROPRIATIONS AND EXPENDITURES.

Federal appropriations and expenditures for improvement of rivers and harbors in Massachusetts from the establishment of the government to the close of the fiscal year ending June 30, 1923, as shown in the following tables, furnished by the Chief of Engineers, U. S. Army: —

TABLE NO. 1. — *Localities at Present under Improvement.*

[Compiled from the Annual Report of the Chief of Engineers, U. S. Army, for the fiscal year ending June 30, 1923.]

Locality.	Expenditures.	Appropriations.
Merrimack River . . . . .	\$404,466 72	\$404,466 72 <sup>1</sup>
Gloucester Harbor . . . . .	538,183 00	538,183 00 <sup>2</sup>
Beverly Harbor . . . . .	51,110 66	209,090 41 <sup>3</sup>
Salem Harbor . . . . .	71,368 66	71,368 66 <sup>4</sup>
Lynn Harbor . . . . .	471,633 64	471,637 00 <sup>5</sup>
Mystic River (upper portion) . . . . .	306,675 91	330,684 84 <sup>6</sup>
Mystic River (below mouth of Island End River) }		
Malden River . . . . .	149,950 00	149,950 00

<sup>1</sup> Of original amount appropriated, \$900 was carried to the surplus fund of the Treasury from previous project.  
<sup>2</sup> Deduction on account of \$3,900 carried to the surplus fund of the Treasury.  
<sup>3</sup> In addition, \$100,000 has been contributed by local interests.  
<sup>4</sup> Of original amount appropriated, \$1,131.34 was carried to the surplus fund of the Treasury.  
<sup>5</sup> Deduction on account of \$5,200 carried to the surplus fund of the Treasury.  
<sup>6</sup> Now consolidated as one improvement.



TABLE NO. 1. — *Localities at Present under Improvement* — Concluded.

Locality.	Expenditures.	Appropriations.
Boston Harbor . . . . .	\$12,661,566 01	\$12,709,827 58 <sup>1</sup>
Dorchester Bay and Neponset River . . . . .	95,008 00	95,008 00
Weymouth Fore River . . . . .	564,914 78	573,750 00
Weymouth Back River . . . . .	26,972 87	27,000 00
Plymouth Harbor . . . . .	364,370 11	417,459 80 <sup>2</sup>
Provincetown Harbor . . . . .	348,062 72	348,062 72
Pollock Rip Shoals, Nantucket Sound . . . . .	1,018,891 28	1,040,000 00
Nantucket Harbor of Refuge . . . . .	576,743 26	591,473 50
New Bedford and Fairhaven Harbors . . . . .	769,610 00	846,610 00
Taunton River . . . . .	204,179 63	204,179 63
Fall River Harbor . . . . .	408,843 25	412,411 49
Totals . . . . .	\$19,032,550 50	\$19,441,163 35

<sup>1</sup> Including Chelsea Creek, \$46,000 transferred by authority of public Resolution No. 58, June 10, 1922.<sup>2</sup> In addition, \$57,400 was expended from contributed funds.TABLE NO. 2. — *Localities in which Work is not now in Progress.*[Compiled from data furnished by the United States Treasury Department and the Chief of Engineers,  
U. S. Army.]

Locality.	Expenditures.	Appropriations.
Newburyport Harbor . . . . .	\$495,900 00	\$495,900 00
Sandy Bay, Cape Ann, harbor of refuge . . . . .	1,941,478 00	1,941,478 00
Bass River . . . . .	20,150 34	20,150 41
Buzzards Bay Harbor . . . . .	2,500 00	2,500 00
Canapitset Channel . . . . .	5,312 54	9,800 00
Chatham Harbor . . . . .	12,171 36	13,732 79
Cohasset Harbor . . . . .	10,000 00	10,000 00
Duxbury Harbor . . . . .	37,000 00	37,000 00
East Dennis Breakwater . . . . .	7 57	1,500 00
Edgartown Harbor . . . . .	25,000 00	25,000 00
Essex River . . . . .	30,000 00	30,000 00
Hingham Harbor . . . . .	38,316 58	39,000 00
Hyannis Harbor . . . . .	221,787 75	221,267 07
Ipswich River . . . . .	5,617 91	7,500 00
Kingston Harbor . . . . .	8,940 09	10,000 00
Little Harbor, Woods Hole . . . . .	18,000 00	18,000 00
Manchester Harbor . . . . .	23,985 57	24,300 00
Marblehead Harbor . . . . .	833 42	1,900 00
Marthas Vineyard Harbor . . . . .	7,000 00	7,000 00
Powow River . . . . .	50,940 72	51,000 00
Rockport Harbor . . . . .	91,229 25	91,232 57
Scituate Harbor . . . . .	104,590 98	104,680 00
Town River . . . . .	37,577 41	37,577 41
Vineyard Haven Harbor . . . . .	55,387 35	60,000 00
Wareham Harbor . . . . .	95,997 30	96,236 00
Wellfleet Harbor . . . . .	11,365 57	16,000 00
Westport Harbor and River . . . . .	3,000 00	3,000 00
Winthrop Harbor . . . . .	9,000 00	9,000 00
Woods Hole Channel . . . . .	343,599 92	344,000 00
Totals . . . . .	\$3,706,689 63	\$3,728,754 25

Recapitulation.	Expenditures.	Appropriations.
Total of Table No. 1 . . . . .	\$19,032,550 50	\$19,441,163 35
Total of Table No. 2 . . . . .	3,706,689 63	3,728,754 25
Totals . . . . .	\$22,739,240 13	\$23,169,917 60

[The tributaries given are those now under improvement, and do not include tributaries heretofore improved.]

Locality.	Expenditures.	Appropriations.
Boston Harbor proper <sup>1</sup>	\$12,661,566 01	\$12,709,827 58
Mystic River (below mouth of Island End River) <sup>2</sup>	306,675 91	330,684 84
Mystic River (upper portion) <sup>2</sup>		
Malden River	149,950 00	149,950 00
Totals	\$13,118,191 92	\$13,190,462 42

<sup>1</sup> Including Chelsea Creek.

<sup>2</sup> Now one improvement.

CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF  
NOVEMBER

CONTRACT NO. AND WORK.	Contractor.	Date.
44 Third Cliff, Scituate, riprap . . . .	W. H. Connor & Son Company . . . .	Feb. 10, 1922
52 East Boston, extension of bulkheads . . . .	William L. Miller Company . . . .	May 29, 1922
53 East Boston, airplane landing field and approaches.	Vincent N. Bellizia . . . . .	Aug. 15, 1922
54 East Boston, steel hangars at aircraft landing field.	Coleman Brothers, Incorporated . . . .	Sept. 1, 1922
55 East Boston, Commonwealth railroad . . . .	J. F. Kennedy Company . . . . .	Aug. 7, 1922
59 Essex River, dredging . . . . .	Bay State Dredging and Contracting Company.	Aug. 7, 1922
63 Gloucester Harbor, rock excavation . . . .	George T. Rendle . . . . .	Sept. 22, 1922
64 Western Avenue, Gloucester, sea wall . . . .	Bay State Dredging and Contracting Company.	Nov. 10, 1922
65 West Harwich, jetty east of Herring River . . . .	George T. Rendle . . . . .	Nov. 8, 1922
66 New Haven docks, dredging . . . . .	Bay State Dredging and Contracting Company.	Oct. 23, 1922
67 East Boston, trestle for railroad crossing . . . .	W. S. Rendle and Son Company . . . .	Jan. 26, 1923
68 Connecticut River, Holyoke, riprap . . . .	Daniel O'Connell's Sons . . . . .	Dec. 15, 1922
71 East Boston, filling . . . . .	Coleman Brothers, Incorporated . . . .	Feb. 20, 1923
72 Waquoit Bay, repairing jetty . . . . .	William E. Burke . . . . .	Feb. 2, 1923
73 Duxbury Bay, Duxbury, dredging . . . . .	Bay State Dredging and Contracting Company.	April 26, 1923
74 East Boston, dredging and filling . . . . .	Atlantic, Gulf and Pacific Company	June 20, 1923
75 Cedar Point, Scituate, stone jetty . . . . .	Bay State Dredging and Contracting Company.	June 20, 1923
76 Gun Rock Point, Hull, repairs to breakwater . . . .	Rockport Granite Company . . . .	June 20, 1923
77 Manchester Harbor, Manchester, dredging . . . .	Bay State Dredging and Contracting Company.	June 20, 1923
78 Quincy Bay, removal of boulders . . . . .	Dennis F. Crowley . . . . .	July 2, 1923
79 Westport Harbor, jetty . . . . .	William E. Burke . . . . .	Aug. 16, 1923
80 Lobster Cove, Gloucester, dredging . . . . .	Bay State Dredging and Contracting Company.	July 5, 1923
81 Bucks Creek, Chatham, dredging and building timber jetty.	W. H. Connor and Son Company . . . .	July 19, 1923
82 Bass River, Dennis and Yarmouth, repairs to east jetty.	W. H. Connor and Son Company . . . .	July 19, 1923
83 Commonwealth Pier No. 5, South Boston, painting.	Steves J. Lacios . . . . .	Sept. 13, 1923
84 Neponset River, dredging . . . . .	Bay State Dredging and Contracting Company.	Aug. 20, 1923



## WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE YEAR ENDING 30, 1923.

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1923.	Total paid to Nov. 30, 1923.	Estimated Amount of Contract.
In progress . . . . .	Unit prices . . . . .	\$43,731 14	\$44,733 71	\$60,000 00
Completed Feb. 16, 1923.	For building single bulkhead, \$28 per linear foot of completed bulkhead. For building double bulkhead, \$28.40 per linear foot of completed bulkhead.	14,097 58	45,256 80	45,200 00
Completed Aug. 29, 1923.	Unit prices . . . . .	25,878 24	38,958 04	35,744 00
In progress . . . . .	Unit prices . . . . .	10,023 27	11,338 64	10,040 00
In progress . . . . .	Unit prices . . . . .	13,536 76	19,510 65	19,597 50
Completed June 9, 1923.	Dredging, 54 cents per cubic yard, scow measurement. Removing boulders, \$18 per cubic yard.	35,163 54	64,257 66	56,340 00
Completed June 29, 1923.	For removing ledge near Five Pound Island, \$14,993. For removing rocks near Parkhurst's Wharf, \$750. For removing rocks in Harbor Cove near Parmenter-Rice and Atlantic Halibut Company's wharves, \$750. For removing rock in Harbor Cove near wharf of Gloucester Fresh Fish Company, \$750. For removing three rocks near head of harbor, \$750.	16,010 47	20,685 47	17,993 00
Completed June 7, 1923.	Unit prices . . . . .	52,787 25	55,677 25	54,830 25
Completed Oct. 20, 1923.	For furnishing and placing stone riprap and chips in jetty and as bank protection, \$5.19.	9,547 85	9,547 85	12,000 00
Completed Dec. 27, 1922.	Dredging, 39.9 cents per cubic yard. Removing boulders, \$16 per cubic yard.	15,420 78	32,770 67	33,900 00
Completed June 15, 1923.	For building trestle, lump sum of \$4,180. For furnishing and driving spruce piling, \$20 for each pile.	4,620 00	4,620 00	4,620 00
Completed April 2, 1923.	For furnishing and placing riprap and all incidental work, \$3.85 per ton of stone in place on the bank of river.	2,865 75	2,865 75	2,837 50
In progress . . . . .	For furnishing and depositing material for filling, ten cents per cubic yard.	6,002 70	6,002 70	20,000 00
Completed Sept. 15, 1923.	For furnishing and placing heavy riprap and stone chips, \$6.39 per ton of 2,000 pounds in place in completed work.	21,587 09	21,587 09	21,587 09
Completed Oct. 4, 1923.	Dredging, 48 cents per cubic yard. Removing boulders, \$20 per cubic yard.	13,742 40	13,742 40	14,400 00
In progress . . . . .	For dredging area at East Boston and depositing material on area to be filled, 23.97 cents per cubic yard. For dredging material brought from other portions of harbor and depositing it on area to be filled, 15 cents per cubic yard.	139,709 99	139,709 99	200,000 00
Completed Aug. 8, 1923.	For furnishing and placing heavy stone riprap, \$3.60 per ton of 2,000 pounds in place in completed work.	31,728 60	31,728 60	30,780 00
Completed Aug. 24, 1923.	For furnishing and placing heavy stone riprap, \$3.00 per ton of 2,000 pounds in place in completed work.	7,428 00	7,428 00	7,500 00
Completed Sept. 14, 1923.	Dredging, 41 cents per cubic yard. Removing boulders, \$15 per cubic yard.	13,312 53	13,312 53	14,000 00
Suspended . . . . .	Lump sum of \$950 . . . . .	—	—	3,700 00
In progress . . . . .	For furnishing and placing heavy riprap and stone chips, \$6.60 per ton of 2,000 pounds in place in completed work.	1,683 00	1,683 00	17,820 00
Completed Aug. 30, 1923.	Dredging and depositing material at sea, 45 cents per cubic yard. Removing boulders, \$18 per cubic yard. Dredging and delivering material in front of Western Avenue sea wall, 45 cents per cubic yard.	14,235 75	14,235 75	14,418 00
Not begun . . . . .	Dredging 70 cents per cubic yard measured in situ. For furnishing materials and building pile and timber jetty, \$18 per linear foot of jetty in place.	—	—	11,500 00
In progress . . . . .	For furnishing all labor and materials and building concrete wall, \$22.70 per cubic yard of concrete measured in completed work.	3,567 26	3,567 26	11,350 00
In progress . . . . .	For painting, the lump sum of \$23,000. For glazing, 20 cents for each light of glass. For reputtying, 13 cents for each light of glass.	7,968 83	7,968 83	24,400 00
In progress . . . . .	Dredging, 59½ cents per cubic yard measured in scows. Removing boulders, \$20 per cubic yard.	24,293 20	24,293 20	46,787 00

CONTRACTS MADE BY THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF  
NOVEMBER 30,

CONTRACT NO. AND WORK.	Contractor.	Date.
85 Cohasset Harbor, dredging . . . . .	William E. Burke . . . . .	Aug. 16, 1923
86 Salters Point, Dartmouth, breakwater extension	Bay State Dredging and Contracting Company.	Aug. 20, 1923
87 Pemberton Point, Hull, sea wall . . . . .	William R. Farrell . . . . .	Sept. 25, 1923
89 Herring River, marsh drainage, Wellfleet . . . . .	William E. Burke . . . . .	Oct. 3, 1923
90 Brant Rock, Marshfield, and North Scituate, wall extension and spur jetties.	Frank H. Barry . . . . .	Oct. 15, 1923
91 Commonwealth Pier No. 1, East Boston, painting.	Maurice M. Devine . . . . .	Nov. 22, 1923
92 Boston Harbor, dredging between Anchorage Basin and Main Ship Channel.	Bay State Dredging and Contracting Company.	Nov. 15, 1923
93 Provincetown Shore protection . . . . .	Nickerson and Edwards . . . . .	Nov. 19, 1923
94 Connecticut River, Northfield, riprap north of Schell's Bridge.	Thomas Aquinas Dollard . . . . .	Nov. 22, 1923
95 Third Cliff, Scituate, riprap . . . . .	Fitzgibbon Company . . . . .	Nov. 23, 1923

WATERWAYS AND PUBLIC LANDS, AND IN FORCE DURING THE YEAR ENDING 1923 — *Concluded.*

Condition of Work.	Contract Prices.	Amount paid during Year ending Nov. 30, 1923.	Total paid to Nov. 30, 1923.	Estimated Amount of Contract.
Not begun . . .	For dredging, 60 cents per cubic yard scow measurement. For removing boulders, \$20 per cubic yard.	—	—	\$6,500 00
Completed Oct. 2, 1923.	For furnishing and placing heavy stone riprap, \$3.84 for each ton of 2,000 pounds in place in the completed work.	\$27,691 87	\$27,691 87	27,800 00
In progress . . .	Unit prices	25,499 96	25,499 96	85,585 80
Not begun . . .	For excavating channel and disposing of material as specified, 54.7 cents per cubic yard measured in situ.	—	—	10,000 00
In progress . . .	For constructing concrete wall at Brant Rock, \$17 for each cubic yard of concrete measured in completed work. For constructing concrete spur jetties at Brant Rock, \$120 for each completed jetty fifteen feet in length. For constructing concrete spur jetties at North Scituate, \$175 for each completed jetty twenty-five feet in length. For pointing up exposed face of sea wall at Brant Rock, the lump sum of \$600.	2,082 50	2,082 50	11,550 00
Not begun . . .	Lump sum of \$1,925 . . . . .	—	—	1,925 00
In progress . . .	Dredging, 44 cents per cubic yard, scow measurement. Removing boulders, \$20 per cubic yard.	3,426 21	3,426 21	13,068 00
Not begun . . .	Unit prices	—	—	39,744 50
Not begun . . .	For furnishing and placing riprap and all incidental work, \$3 per ton of stone in place in completed work.	—	—	4,500 00
Not begun . . .	For furnishing and placing stone riprap, \$3.94 per ton of 2,000 pounds.	—	—	31,520 00



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